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N AGE

A CHILTON PUBLICATION

The Iron Age

NATIONAL METALWORKING WEEKLY

March 25, 1954

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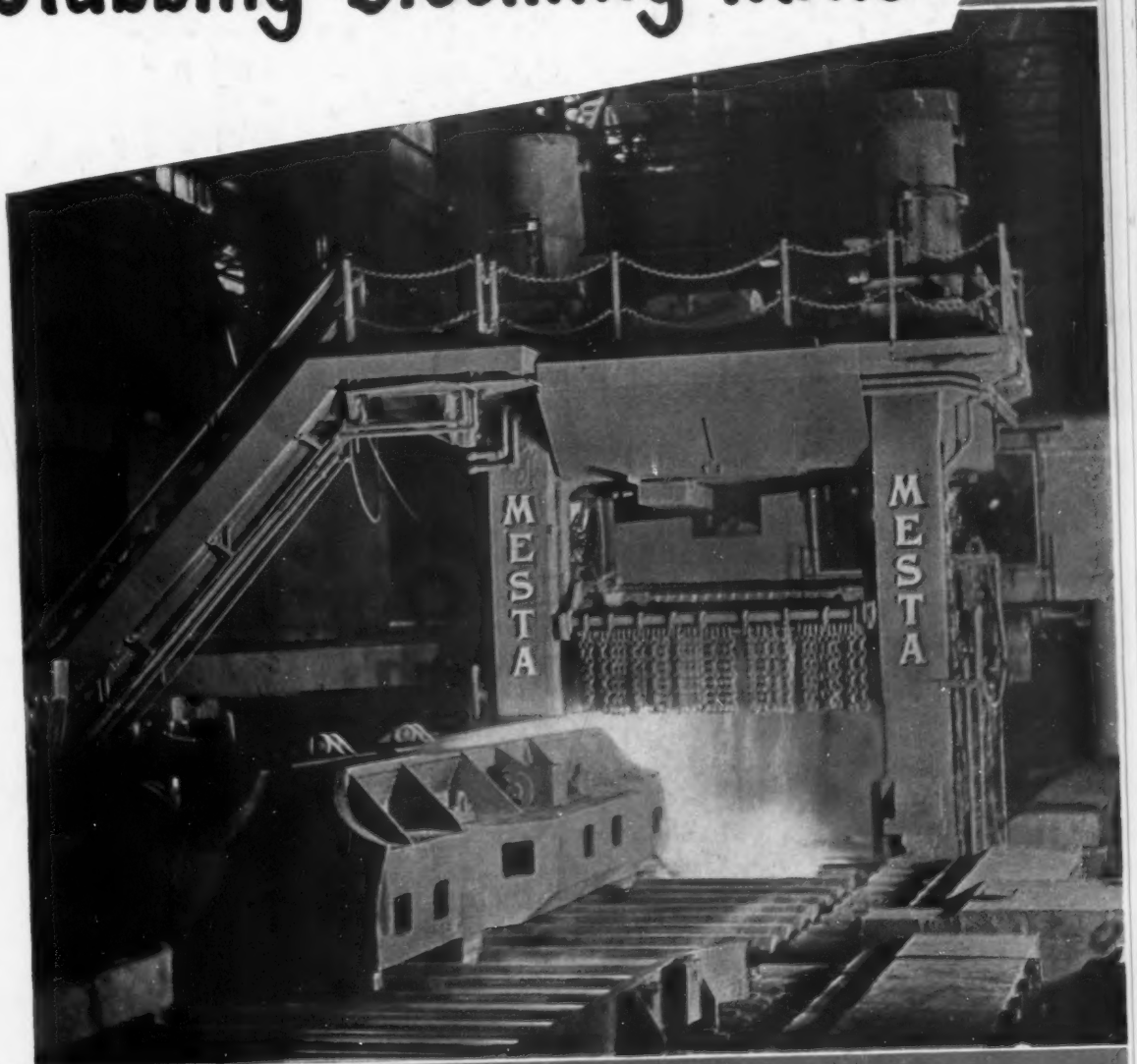
MAR 26 1954

ENGINEERING
LIBRARY

Modern Reversing Slabbing-Blooming Mills

Designed
and
Built by

**M
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MESTA 46" Reversing Slabbing-Blooming Mill
Installed at the Pittsburgh Works of the Jones and Laughlin Steel Corporation

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY, Pittsburgh, Pa.

How much heat from a "heat" of Chromel

You've seen molten metal before . . . but chances are you've never seen a "heat" that's more closely controlled as to composition and quality than the one you see above. For this is a heat of Hoskins Chromel . . . the *original* nickel-chromium alloy that *first* made electrical heating practical. Into it go precise amounts of the purest raw materials obtainable . . . mixed, melted, and poured in exactly timed cycles.

And from it, ultimately, will come approximately 1200 pounds of fine finished material . . . smooth, bright, durable wire or ribbon produced to a specified resistivity for long, dependable service as heating elements or cold resistors in countless different electrical devices.

Chromel, however, is only one of many specialized, quality-controlled alloys developed and produced by Hoskins. Others include: Alloy 502 . . . used throughout industry for a wide range of heat resistant mechanical applications. Spark plug electrode alloys . . . which have become universally accepted standards of quality and durability. Alloy 717 . . . used in facing engine valves for longer life and improved service. And, of course, there are Hoskins Chromel-Alumel thermocouple alloys for industrial furnaces and jet engines . . . unconditionally guaranteed to register true temperature-e.m.f. values within close specified limits.



Heating elements made of Hoskins Chromel give long life service in industrial electric furnaces, home appliances.



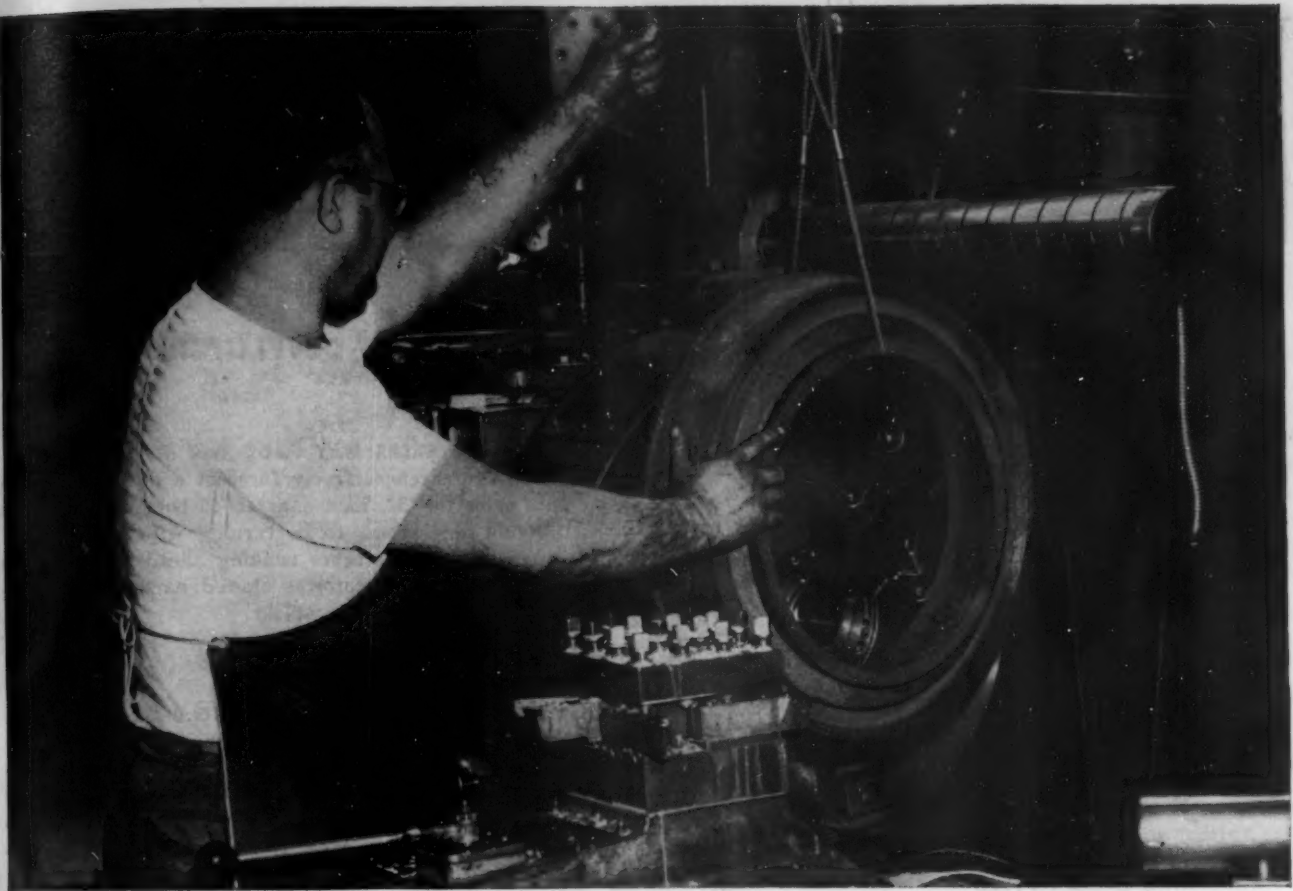
Spark plugs equipped with Hoskins electrode alloys give long dependable service wherever they're used.



Hoskins Chromel-Alumel thermocouple alloys accurately register exhaust temperatures of jet aircraft engines.

HOSKINS
MANUFACTURING COMPANY
4445 LAWTON AVENUE • DETROIT 8, MICHIGAN





Circular blank being positioned for machining at a General Electric plant.

So Many Uses for These Sturdy, Low-Cost Blanks

If the products you make require the use of circular steel blanks, we have something that will interest you. We mean Bethlehem's circular forgings, as they are known to the trade. Actually, these strong, homogeneous blanks are both forged and rolled, with the attendant benefits of the two-way process.

Customers use them for making gears, including spur, bevel, and her-

ringbone; crane-track wheels, end rings, sheave wheels, turbine rotors, flywheels, tire molds and rings, industrial wheels, pistons, clutch drums, and similar parts. For all such applications Bethlehem blanks are the solid, logical choice—the ideal choice, really.

We have mentioned that they are strong. Other advantages include excellent grain flow and uniform density of metal. Because of this latter feature, machinists can take cuts of required depth with confidence; fewer finishing cuts are required, and the cutting speed is often higher.

Your own firm can probably find plenty of uses for these sturdy forged-and-rolled steel blanks. They are available in a wide range of sections, and they can be furnished untreated or heat-treated, as you prefer. Sizes run from 10 in. to 42 in. OD.

We're always glad to tell you the full story, any time you wish. But before we do, perhaps you'd like to send for our Booklet 216. It shows how the blanks are made, and how they are used by many well-known companies. Write for a copy today.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



Large spur gears made from Bethlehem blanks.

BETHLEHEM FORGED-AND-ROLLED CIRCULAR BLANKS

March 25, 1954

The Iron Age

Vol. 173, No. 12, March 25, 1954

*Starred items are digested at the right.

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THE IRON AGE, published every Thursday by the CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, \$15; other Foreign Countries, \$25 per year. Single copies, 35¢. Annual Review and Metal Industry Facts Issue, \$2.00. Cable: "Ironage." N. Y.

Address mail to 100 E. 42 St., N. Y. 17, N. Y.

DIGEST of

NEWS DEVELOPMENTS

APPLIANCE SALES MAY FOOL THE EXPERTS — P. 71
Market researchers freely forecast a decline in appliance sales for '54. Last quarter '53 bore them out. But the tide now seems to be turning with a number of appliance manufacturers running ahead of last year's volume. Heavy inventories slowed parts buying. Distributors still wary on stocks.

ATOMIC ENERGY: FROM BOMBS TO BUSINESS — P. 73
No mushroom cloud and no concussion louder than the banging of a gavel marked atomic energy's latest milestone—the first meeting of the Atomic Industrial Forum. Theme of the conference was business opportunities in atomic energy. Industry libraries are opening. How to sell to AEC.

LAKES IRON ORE SHIPPERS TRIM SAILS — P. 78
Great Lakes shippers have trimmed their sales for the 1954 ore season. Judged by most past years, this season's haul shouldn't be skimpy. But it will fall far short of the 95,844,449-ton record set last year. Shippers predict a 73-million-ton year. They're emphasizing efficiency, may retire older vessels.

DEVELOP COMMERCIAL AUTO GAS TURBINE — P. 79
Chrysler, dark horse in the gas turbine field, has developed the first gas turbine to power a conventional production car. A Plymouth Belvedere sports coupe with the turbine engine is now being tested on the proving grounds. Poses complex metallurgical and manufacturing problems.

CAMSHAFT A TROUBLE SPOT IN HP RACE — P. 99
One of the most pressing problems in the auto industry is excessive camshaft and valve lifter wear that may occur in high output engines. Almost every producer of a new V-8 has faced the problem. A big question lies in lubricants. Some oils work fine in some engines—but may raise hob with others.

THE BUSINESS UPTURN MAY BE STARTING — P. 95
The much predicted business upturn may be starting. Slowdown of recent months has shifted into a gentle but discernible pickup in some areas. Stepped up activity is noted by Administration economists in autos, appliances, construction. Retail sales gain. Navy wants more 25,000-ton tankers.

of the Week in Metalworking

ENGINEERING & PRODUCTION

PRETREATED SHEETS RAISE PART QUALITY — P. 133
Mill treated sheet and strip, available in many widths and gages, may help you improve product quality and cut production costs. Weights of coatings are varied to specific requirements. Proper cleaning, uniform coating, better paint surfaces are assured. Surfaces wear longer and corrosion protection is assured.

STAINLESS, ALLOY STEELS HOT EXTRUDED — P. 137
Stainless and high alloy seamless tubing and shapes are now being hot extruded on a commercial basis at the Watervliet plant of Allegheny Ludlum. All standard 300 and 400 series grades are used. Tubing from 1½ to 4 in. in diam and 12 to 45 ft long can be produced at a rate of 25 to 30 pushes per hour.

TUBES AID STEEL PLANT COMMUNICATIONS — P. 141
Quality control samples, bulk mail distribution and interoffice communications are handled efficiently by pneumatic tube systems of a large eastern steel plant. An average of 10,000 pieces of mail are handled each day. One system serves 20 departments. Carriers in several sizes are used to carry metal samples.

DEBURRING: BETTER METHODS CUT COSTS — P. 144
Improved methods have taken the edge off high production costs in burring, chamfering and edge-breaking operations. Special machinery effectively burr and chamfer gear teeth at high speed. Air blast methods, wire brushing, tumbling, and use of special cutters and abrasive materials help to lower costs.

VERSATILE HEAT TREAT LAYOUT EFFICIENT — P. 148
Five gas-fired, batch-type units economically heat treat up to 50 tons a day of fasteners in a tremendous range of types and sizes at one plant. Oven, pit and slot-type furnaces, plus descaling baths are standard units. Initial cost of equipment is low. Minimum floor space required aids in locating units for best efficiency.

NEXT WEEK—NEW FINISHES FOR POWDER METAL PARTS
New finishing techniques now make plated powder metal parts superior in corrosion resistance to metal parts plated by standard methods. Improvements apply where corrosion resistance is coupled with other desired factors such as decoration, electrical contact or conductivity and solderability.

MARKETS & PRICES

WILL SPRING END FOUNDRY SALES SLUMP? — P. 74
Overall first quarter foundry business has been about 20 pct under '53 levels. But this month has seen an order spurt, and an IRON AGE check found the industry generally optimistic on second quarter prospects. Competition and mechanization are hallmarks. Orders reflect short-term inventory policies.

METALS COMPETITION LIGHT IN EUROPE — P. 77
Competition between aluminum and steel in European markets amounts to only about 1.5 pct maximum of the aluminum production. Little increase seen, according to recent ECE review. But active development of new markets for aluminum production is forcing steel industry there into intensified sales research.

STAMPERS STRESS SALES, COSTS, STOCKS — P. 81
Stampers believe that hard selling and cost accounting will regain for them the 15 pct drop-off in volume they underwent in the first quarter. Suppliers to the Big Three auto firms are doing well but those with customers among the independents report sales off as much as 50 pct.

HIGH INVENTORIES PLAGUE TINPLATE MILLS — P. 84
Tinplate producers still feel effects of last December's can strike. Mountainous inventories built up during the month-long walkout are the industry's biggest problem. It may take until July to work off this fat but producers foresee an upturn then. Output should almost equal 1953.

STEEL UPTURN STILL AROUND THE CORNER — P. 165
The near term steel market outlook must be discouraging to the optimists who predicted a first quarter upturn in business. This week the upturn seems no nearer than it has for the past several weeks. Additional evidence only shows how badly some producers misjudged effect of consumers' inventories.

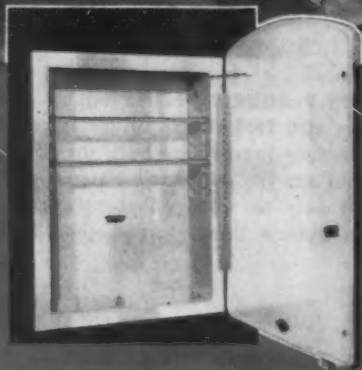
CHILE THREATENS IRON CURTAIN SALE — P. 168
Once again Chile says it will sell copper anywhere in the world. This time it's an attempt to find an outlet to prevent necessity of production cutbacks already requested by copper companies. Observers hold that the statement is merely a bargaining lever, that Chile wouldn't want to strain U. S. friendship.

THIS accurate BLANK saves money

ALL ALONG THE LINE



Photos Courtesy The F. H. Lawson Company



These accurate blanks are held to tolerances of $\pm .005$ " on Cincinnati Shears in the shops of The F. H. Lawson Company, manufacturers of medicine cabinets, pails and all sorts of containers.

In lots of 10,000 at 400 an hour these $24\frac{1}{2}" \times 28\frac{5}{8}"$, 26 gauge blanks are produced with such accuracy that production costs all along the line are low. One and one-half to two million cuts are made before knives need regrinding . . . another important factor in the low cost. Rejects and reworks are very few. Only accurate blanks bring low cost forming and assembly.

Write for Catalog S-6.



THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES

Dear Editor:

Letters from readers

The Numbers Game

Sir:

I have just finished reading your editorial "The Numbers Game" in the Mar. 11 issue. This is a very timely and well written article, due to current confusion over "McCarthyism."

His methods may not be a gentlemen's approach but, if my memory is correct, President Eisenhower's two predecessors didn't use tact in getting rid of or ridiculing those who dared to question their policies.

Lindbergh and Randall are good examples. President Eisenhower should be honored by every American for restoring Lindbergh's rank and thus making it possible for our country to utilize fully the services of one of the greatest aviators of all times.

I do not believe we should underestimate the activities of those who are ready to aid Russia in their battle to win the world leadership they desire. I would not be too concerned about the means of smoking out the bad actors but, instead, make sure they are removed from public service in any branch of our government.

We should never forget that the well organized, armed minority and not the majority is the one who overthrows governments and seizes control by force.

Keep up the good work!

R. H. LARSON
Vice-President

Indiana Forge & Machine Co.
East Chicago, Ind.

Time-Lapse Photography

Sir:

We are very much interested in time-lapse photography which was the subject of an article appearing in the Oct. 29, 1953 issue of your magazine.

Please forward all available information you may have on the subject to us.

H. W. WAGNER
Assistant Buyer

Western Electric Co.
Point Breeze Works
Baltimore

For more details contact George L. Oakley, manager of industrial sales, Bell & Howell Co., 7100 McCormick, Lincolnwood, Ill.—Ed.

Electrostatic Detearing

Sir:

I was very much interested in the article "Electrostatic Detearing Improves Dip-Coating Quality" by J. J. Obrzut, which appeared in the Feb. 4 issue.

I would be deeply appreciative for any information you can give me re-

garding the availability of this equipment and from whom it is obtainable. It would also be appreciated if you could tell me if there is any individual or firm that could advise us on the problems of adapting our plant and present method of coating to this process.

W. J. TORPEY

L. Mendelson Co., Inc.
Furlong, Pa.

The Ransburg Electro-Coating Corp., Indianapolis, manufacturer of the equipment, will be able to give you detailed information on all aspects of electrostatic detearing.—Ed.

Iron Forging

Sir:

In the Feb. 4 issue, on p. 109, there is a reference to the forging of nodular cast iron. We are extremely interested in this development and in consequence, would like to enlist your help in developing complete information.

G. S. SCHALLER
Prof. of Mechanical Engineering
University of Washington
Seattle

We suggest you contact Dr. Max Kronenberg, 15 E. Eighth St., Cincinnati, for more information.—Ed.

Carbides

Sir:

May we have your permission to make a reprint of the article "Carbides: Solid Pieces to 4000 lb Can Be Produced at Detroit" which appeared on pp. 170, 171 and 172 of the Mar. 4 issue.

We plan to reproduce this article in our own facilities here in Detroit and mail to our customer list.

J. W. MASON
Manager, Creative &
Advertising Production
Operations

Carbide Dept.
General Electric Co.
Detroit

Clarification

Sir:

The manufacturer of the forging furnace shown on p. F-31 in your Feb. 25 issue has written me as follows:

"There is, however, one serious error insofar as our equipment is concerned and it occurs on p. F-31 of THE IRON AGE article, wherein they refer to forging aluminum and this should be steel.

"I do not know what can be done about correcting the error but it should be corrected if at all possible."

C. L. IPSEN
Executive Vice-President
Industrial Furnace Manufacturers Assn.
Washington

"I Say
Sheet Coil"



THIS IS
COLD ROLLED
SHEET
COIL

Produced by High Speed
Rolling on Continuous
Wide Multiple Stand
Mills and Still in
Width
NOT TO BE CONFUSED WITH
PREMIER QUALITY
COLD ROLLED STRIP
STEEL



"I Say
Thinsteel"

Produced by High Speed
Rolling on Special
Reversing Mills with
Special Ground Rolls for
Fine Surface Finish and
Close Accuracy
NOT TO BE CONFUSED WITH
PREMIER QUALITY SHEET COIL

Which kind of Cold Rolled Strip Steel is best for You?

CONSIDER SHEET COIL

- if variations in physical characteristics are permissible.
- if fairly heavy oversize gauge variations are not objectionable.
- if the fabricating operations are not too complicated and do not require intricate expensive dies.
- if a fine surface finish is not essential.
- if a good base for paint or enamel is desired.
- if you do not object to some "square footage" loss due to oversize variation.
- then Sheet Coil will probably be the most economical material for the job.

CONSIDER THINSTEEL

- if you must have a high degree of uniformity of chemistry and physical properties—and precision gauge tolerances.
- if you wish to keep die wear low, no oversize gauge variations.
- if you require a fine finish or a better base for plating.
- if you want maximum yield for "most finished parts per ton."
- if you want selected tempers for maximum strength and lightest weight.
- then you'll find Thinsteel the most economical material by far.

No Argument
Here



Kenilworth
Stocks Both

You can always count on Kenilworth helping you get the right steel for your requirements. Order Sheet Coil or Thinsteel and notice that each coil carries an identifying tag as pictured above. Call on Kenilworth, too, for your needs in Stainless Sheets or flat rolled Spring Steels (Annealed or hardened and tempered).

THE Kenilworth
Steel Co.

750 BOULEVARD,
KENILWORTH, NEW JERSEY
SPECIALISTS IN FLAT ROLLED METAL PRODUCTS
Telephones: N. Y. COlrandt 7-2427
N. J. UNionville 2-6900
Teletype: Roselle, N. J., 387

Which comes first—

COAL or STEEL?



● We give up . . . Without coal, the vital steel industry of today could not exist. Without steel, the enormous tonnage of coal needed by the steel industry could not be produced or delivered. Here is another example of the interdependence of two basic industries!

We can report *this*, however: The mines in Baltimore & Ohio territory are prepared and equipped to go right along with the steel industry in its expansion program. Too, there are millions of tons of untapped reserves of coking coals available for development.

These coals are available in varieties for all coking needs. They are easily accessible, and in plentiful supply for long-range planning. Whatever your requirements, let us advise you. Just ask our man!



**BITUMINOUS COALS
FOR EVERY PURPOSE**



BALTIMORE & OHIO RAILROAD

Constantly doing things — better!

Fatigue Cracks

by William M. Coffey

Boy!

We've been pointing our young son for a General of the Army-ship or an Admiral of the Fleet-ship or President of U. S. Steelship or Chief Justice of the United Stateship, or Chief Engineer on the 7:30 Stamford expressship. Things like that. But we're going to change that target and try to make an editor of THE IRON AGE out of him. You will easily see why we've shifted our sights when you read this routine report from Dick Raddant, regional editor at Detroit:

"Over at the Chicago Auto Show last week I had quite a long talk with Evelyn Ay, Miss America, in case you never looked at the name. She is connected with Nash and made an appearance with the Nash exhibit.

"I was asked by a Nash man if I wanted to meet her and in spite of my protests he led me over to her and introduced us.

"I can report that she has all the visible equipment necessary for the title. In heels, she was exactly my height, 5'11" which gave me a chance to remark that she had hazel eyes. Not so, she said, they're green.

"She said she was having a wonderful time as Miss America, emphasized that the bathing suit part was just a small factor in the title, hopes to go back to the University of Pennsylvania and marry a lad she is engaged to. She likes to ice skate, but the promoters think her pins are too attractive as they are to risk having one of them in a plaster cast while the promotions are going on. I agree."

Dear Tom: Can we be an editor?
Our eyes are green.

Oops!

Two weeks ago in this "column" we listed Mr. George Long as Advertising Manager of the Sales Corp. of America. Actually, Mr. Long is same for Selas Corp. Oops! Oooops!

Inside The Iron Age Again

Here's one more example of the editorial power of THE IRON AGE. It concerns our Nonferrous Editor Bob Hatschek.

March 25, 1954

L'ALUMINIUM DANS L'INDUSTRIE DU PETROLE

R. L. Hatschek montre les importantes utilisations de l'aluminium qui doivent se produire à bref délai dans l'industrie du pétrole. Pour sa part, la Reynolds Metals Co., estimant que l'industrie du pétrole doit prochainement devenir un des plus gros consommateurs de métal léger, a déjà pris contact avec une vingtaine de sociétés pétrolifères dans le Texas et la Louisiane. Parmi les applications de l'aluminium déjà réalisées ou en cours d'étude, citons; les pipe-lines; les canalisations d'aspiration des puits; les cuves ou la partie supérieure d'éléments de cuves; les tubes pour échangeurs de chaleur, des revêtements divers; des feuilles d'aluminium pour l'emballage d'échantillons, etc.

The Iron Age, 18 juin 1953, p. 102.

We've been kidding you plenty this past year if you got the impression that we can read French (Parisian French, that is)—so we only hope that what the above says is good about Bob and your ffj.

Puzzlers

The answer to the peddler-necktie puzzler (Feb. 18) lies in the average cost of each tie. Averaging 1/3 and 1/2 does not give 2/5, but 5/12 or 25/60. 2/5 equals 24/60. Thus 1/60 of a dollar is lost on each sale. Winners: Mark Perucich, A. W. Pflieger, Jr., Ken Fraser, George Flynn, R. D. Elwell, Maud Chambers, Harry Kallman, Hubert Hinds, Arthur Hilton, Adam McBride and D. P. Morgan.

New Puzzler

A racing driver is making a run on a 2-mile track. He desires to average exactly 60 mph for the run. During the first mile he experiences a little engine trouble and as he passes the 1-mile marker he is signalled that he has averaged only 30 mph for the first half of the run. How fast must he travel the second mile in order that his average for the 2-mile run be 60 mph?

now you can
produce
trouble-free,

FREE-
MACHINING
STEEL
with
FOOTE
MANGANESE
SULPHIDE

This fume-free ladle additive increases quality and reduces the cost of producing high sulphur, free-machining steels . . . with these plus advantages:

1. improved hot rolling behavior
2. fewer surface defects
3. fewer diversions
4. lower conditioning costs
5. low carbon content saves heat time

TYPICAL ANALYSIS

Manganese	53%
Sulphur	32%
Carbon	.22%
Size: 1" x 5" lump	

write for further details!

Foot
MINERAL COMPANY

438 Eighteen W. Cheltenham Bldg.
Philadelphia 44, Pa.



HIGH SPEED FLAT WIRE MILLS

These high-speed Torrington units are designed to roll flat wire at high production rates. Available in a wide variety of sizes with automatic controls, they provide maximum flexibility. Combinations of two or three flattening stands together with edgers accommodate a great variety of work. Handles 4,000 lbs. weight at entry, up to 1,000 lbs. on winder, with speeds as high as 3500 FPM and more. All operations can be performed by power—pneumatically, hydraulically or by electric motor—under operator's control at a main pulpit or at control stations advantageously located.

THE

TORRINGTON

**MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT**

THE IRON AGE Newsfront

MORE PRIMER IS BEING SPRAYED ON auto sheetmetal parts. Some users report spraying permits use of heavier material to obtain a thicker film, gives more uniform coating thickness, permits better filling.

AIR CONDITIONING SALES this year may be headed for another new high. Two leading producers have reported that sales started unusually early this year. An early heat wave in the Southwest is a contributing factor.

RAILROADS ARE FIGHTING TO REGAIN iron and steel traffic lost to trucks. Biggest blow has been in sheet and strip shipments which now run about 76 pct for trucks, balance for rails. Rails hope new reduced rates will do the trick.

SEVENTY FIVE MILLION TONS OF ORE will probably be hauled by the Great Lakes ore fleet this year. At present rate of consumption stocks on hand could keep mills going 5 months, some sources estimate. Heavy stockpiles and reduced steelmaking operations may cut normal shipping season by almost 2 months.

FASTER, MORE ACCURATE MEASUREMENT of peak values of transient electrical, sonic, and explosive pressure waves is reported possible with a new Navy-designed impulse vacuum tube voltmeter.

ULTRASONIC VIBRATORS have been applied to treatment of molten aluminum. With a high powered generator and transducer unit, gas pockets can be removed from molten aluminum and the grain structure of aluminum ingots refined, engineers have determined.

INCREASING MECHANIZATION in foundries has demanded a speedup in auxiliary operations. Dried cores are now being turned out faster on a specially designed dielectric dryer. Dryer units can be assembled on a building block basis for high output in minimum space.

SUBSTANTIALLY LOWER MACHINING costs were attained recently in high velocity machining of 52100 spheroidized annealed forgings. Carbide tooling was used in the study comparing high vs. low velocity machining.

AUTOMATED GRINDING OF CRANKPINS has been successfully accomplished with a recently designed machine. Built in wheel truing, compensation for diameter reduction, part inspection, and elimination of many handling operations are advantages of the setup.

IMPROVED HYDRAULIC TURBINES AND PUMPS will be the end product of cavitation studies now being made. A pressure chamber in which temperature, amplitude and absolute pressure can be controlled within a wide range is being used in tests conducted by a large company.

DESPITE STEEL LABOR FRONT QUIET, union and companies will be poles apart as bargaining starts. Union leaders will press security demands hard. Companies will take position economic situation does not warrant higher wage costs. Union may try an economic measure short of strike, i.e., slowdown.

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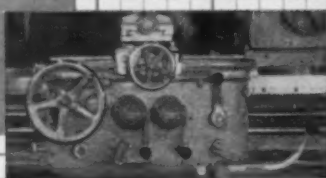
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Dark areas show generous depth of flame-hardened surfaces on sections cut from Axelson 32" lathe carriage bedways. The dimensions indicate the greater width of Axelson ways.

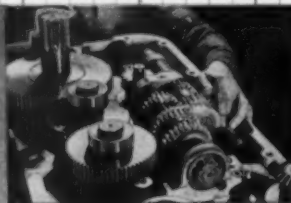


Carriage and cross slide are massive without being bulky; compound is cast steel; tailstock is 2-speed.

Apron pump supplies controlled oil flow to carriage bedways, cross slide on 20" D, and 25" and 32". Controlled oil flow to tool slide and lead screw split nut on all models.



CRITICAL DIMENSIONS STAY PUT ON AXELSON LATHES



All apron gears, including sliding bevel gears, are enclosed within apron, immersed in oil and safeguarded from dirt and chips.



All bearing surfaces on headstock, carriage, cross slide, tool slide, tailstock are hand-scraped to insure absolute precision.

20" precision, 24 speed, tool room lathe.



AXELSON MANUFACTURING COMPANY DIVISION

PRESSED STEEL CAR COMPANY, INC.
LOS ANGELES 58, ST. LOUIS 16, NEW YORK 7, TULSA 1



RAILROAD FREIGHT CARS • STANDARD PARTS • DAIRY & FARM EQUIPMENT • WASTE CONTAINERS • STAINLESS STEEL COOKWARE
CAR ACCESSORIES • TANKS • ABITATORS • SMOKE STACKS
DUST COLLECTORS • COAL & ASH HOPPERS • FITTINGS & ELECTRICAL ACCESSORIES • ORDINANCE MATERIEL • UNISMELTER RELOCATABLE HOMES • EXPORT ONLY: LOCOMOTIVES & TRACKWORK
CARS (MINE, ORE, CANE, INSPECTION) • UNISTRUT METAL FRAMING
WEED BURNERS • BRICK & TILE MACHINERY • CANE LOADERS



LATHES • ENGINE • TOOL ROOM • HOLLOW SPINDLE • GAP BED
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Will '54 Appliance Sales Fool The Experts

Market researchers had predicted '54 sales slump . . . But demand now trends up . . . Heavy inventories slowed parts buying . . . Distributors still wary on stocks—By K. W. Bennett.

When Norge announced recently that dollar business in the first 2 months of 1954 was running 20 pct ahead of the same period last year, industry made mild excuses. When television sales for January were announced as the highest in history for that month, people began to get curious.

Market researchers had freely forecast a decline in appliance sales during 1954. October, November, and December of 1953 bore out their prediction. Factory sales of washers, for instance (see chart), declined 5 pct below the previous year's level in October, slid 18.7 pct below in November, then swooped to 39.2 pct below in December.

Sales Turn Up

Now the tide seems to be turning. One major appliance producer is currently running 18 pct above the same period last year. Another rose 6 pct above last year's January sales level in Jan-

uary of 1954, at present is running 10 pct above the same period last year, and expects to run 10 pct above last year's first-half level during first-half 1954.

For this firm, first-half 1953 was a record period. Another large producer forecast low sales, kept finished goods inventories low, now reports production will be stepped up to meet a March upturn that will put the month's appliance sales 5 pct ahead of March 1953.

A large producer reports his distributor inventories "very low," frankly admits that his marketing staff was dead wrong. Predicting a 8-10 pct dropoff in unit volume during 1954, they've caught an upswing that began in January and is continuing to hold. In this case deliveries actually had to be extended. The company began a slowdown in November of 1953, by February was caught with seriously depleted stocks of finished goods.

Steel companies have been reporting a mild upturn in order volume for the past three weeks, but didn't attribute any particular step-up in buying to appliance manufacturers. And suppliers of components who depend on appliances for their market are still little better off than they were in the doldrums of last December.

Trim Parts Inventories

The slow pickup among the supplier industries, despite growing appliance business, is believed due, for one thing, to extremely heavy component inventories that were built up in July, August, and September. One, for example, in July, just before the slowdown began, upped his order for one component stamping by 10 times.

Appliance companies like the above were ordering heavily after a very strong first half, and when the sharp dropoff came in the fall and early winter months, found their shelves loaded with appliance parts in many cases. The same applied to raw steel, which was a strong inventory item as late as January. Many appliance men feel that raw steel is still a heavy item, aren't planning in-

Was December End of Appliance Sales Slump?

Factory sales, Home Laundry, Assn. Pct column for washers expresses pct of change over or under sales for the same month in the previous year.

	WASHERS	PCT	DRYERS	IRONERS	VACUUM CLEANERS
1953—December.....	191,570	-39.2	82,730	6,908	190,773
November.....	238,153	-18.7	78,167	10,105	216,227
October.....	310,867	- 5.2	81,839	11,666	249,383
September.....	340,532	+20.0	86,461	9,113	227,253
August.....	291,260	+14.4	70,774	8,067	185,029
July.....	228,268	+10.0	33,296	9,626	159,446
June.....	304,086	+10.8	32,789	12,529	197,506
May.....	286,515	+34.1	32,867	9,323	252,404
April.....	288,474	+32.8	28,556	14,080	268,548
March.....	345,989	+39.3	49,593	16,066	329,294
February.....	326,604	+27.6	57,136	22,586	246,007
1953—January.....	277,309	+29.6	62,260	24,260	255,886
1952—December.....	310,661	+42.1	70,584	16,798	.....

May Coax Iron From Unusable Ore

Republic, National Lead attempt concentration of iron from low-grade nonmagnetic ores . . . Seek to supplant vanishing high-grade reserves . . . Will open Birmingham pilot plant.

Commercial concentration of low-grade nonmagnetic iron ore may be one step nearer to reality next summer when a new pilot plant is scheduled to go into operation.

Part of a joint program by National Lead Co. and Republic Steel Corp., the plant is being built at Republic's Spaulding iron mine near Birmingham, Ala. Direct aim of the project is upgrading of southern iron ore and iron-bearing materials, some of which are not now usable.

To Test Several Principles

Process was developed largely as a result of work done by National Lead on titanium ores in New York State and Norway. The firm believes its method is ready for commercial use and the pilot plant is designed to determine the best type of equipment, the most economical fuels and procedures.

Investigations will be carried out on four different furnace principles, shaft, rotary, moving bed

and fluidized bed. Variations and modifications will be studied. Several different types of magnetic separators have been installed and may give way to others before final evaluation.

Seek High Iron Content

Low-grade ore will be rough-ground and reduced by roasting to a mixture of magnetic oxides and free iron. Separation of the unwanted gangue will be done magnetically. Resulting product will be ground further and agglomerated for blast furnace use by some process such as pelletizing or briquetting.

Goal is an end product with a very high iron content—considerably higher than the 64 to 65 pct iron content of present taconite concentrates. It is hoped that this will result in substantially higher blast furnace yield, effectively increasing pig iron capacity without adding new stacks.

Ferruginous sandstone along

with other sub-marginal ores will provide a large portion of the pilot plant's diet but possibilities extend much further. Bureau of Mines estimates reserve of sandstone containing 23 to 27 pct iron exceed 1 billion tons in the Birmingham basin alone. Beyond that is seen possible application of the process to the billions of tons of nonmagnetic taconite reserves.

Would Help the South

This is especially important to the South as the steel industry there must now either concentrate local ores of no better than 36 pct iron content or bring in high-grade ore from elsewhere. Present concentration is done by flotation or tabling.

With the depletion of high-grade domestic iron ore reserves approaching, the steel industry is beginning a shift of emphasis to foreign ores and low-grade domestic ores.

Taconite reserves in Minnesota and Michigan are vast but only a relatively small portion is naturally magnetic. The rest is nonmagnetic and must be concentrated by either a flotation process or by making it magnetic to facilitate the simpler magnetic separation. Both types contain about 24 to 30 pct iron.

Special Report

Continued

creased buying for at least another 30 days.

There's another reason for the slow pickup of components buying. Even with evidences of an upturn being reported by an increasing number of appliance producers, their purchasing agents remain wary. Remembering the sharp drop in sales last September and October, they play it close. One supplier summed it up:

"I'm running better than 10 pct below the same period last year. I know that some firms are in poorer shape, as much as 25 pct off, though part of that is automotive. But I had an appliance purchasing man in here yesterday. In 30 days, I know that I'm going to start increasing production again."

Stories of loaded distributor inventories, "warehouses full of appliances," and liquidation sales are still rife. But the sharp decline in factory sales in fourth quarter 1953 would indicate that distributor inventories are in better shape than they were in latter 1952 when the same stories were heard. And 1953, it will be remembered, was a record year. Most appliance sales chiefs feel that the distributor is inclined to lean the other way, that he's determined to keep stocks barely at the subsistence level, order appliances only as sold.

Nobody is hog wild with enthusiasm. Already there is a virtual price war among automatic washer distributors. Sales forces are

loaded to the teeth with selling ideas and gimmicks. Model changes are accelerating. New production capacity is coming in. There's some feeling that increased sales by larger producers will have to come out of the skins of smaller producers. Producers told THE IRON AGE of consuming as much as 50 pct less steel in January and February than they did during the same months last year.

But January, February, and March are traditionally the dark months, save for dryers. Second quarter is the cooler-refrigerator-air-conditioner period and it seems to be beginning early for at least some producers. Even among the small producers, there's hope.

ATOMS: From Bombs to Businesses

Industrial applications of nuclear energy theme of first Atomic Industrial Forum . . . Consultants prove value . . . Open atomic libraries . . . How AEC buys—By R. L. Hatschek.

Atomic energy has passed a new milestone—without a mushroom cloud—marked by no concussion louder than the banging of a gavel. Not yet a year old, the Atomic Industrial Forum held its first meeting last week in New York.

Theme of the conference was "Business Opportunities in Atomic Energy." Present day industrial uses were stressed and looks into the future aimed at what private firms should do today to achieve promising goals tomorrow.

Cooperate With Consultants

Discussions covered all phases of industrial applications of nuclear energy except large scale electric power generation. Current uses include applications of radioactive materials in thickness gages, radiography, tracers and others. In the potential category were an atomic-powered locomotive, food and pharmaceutical processing, and several other industrial uses of both reactors and reactor products.

Other sessions were devoted to non-profit research facilities and government services available to industry as well as a roundup of private consulting and engineering companies qualified in atomic energy.

Much of the knowledge which would be useful to firms entering the nucleonics field is necessarily restricted and Atomic Energy Commission can pass it on to cleared individuals only on a "need to know" basis. But there is no objection to these individuals acting as consultants for business clients as long as no classified information is passed on.

Because of this and the newness of the field, there seems to be a special place for nuclear consulting firms. Several have already been established and are proving their value.

On the dissemination of current knowledge that would prove useful

to industry, Dr. Alberto F. Thompson, chief of AEC's technical information service, announced that the Forum would be the first special depository of atomic information for industry. The library, located in New York, will be open to non-members and is expected to be in operation in about a month. Others will be set up in three different sections of the country.

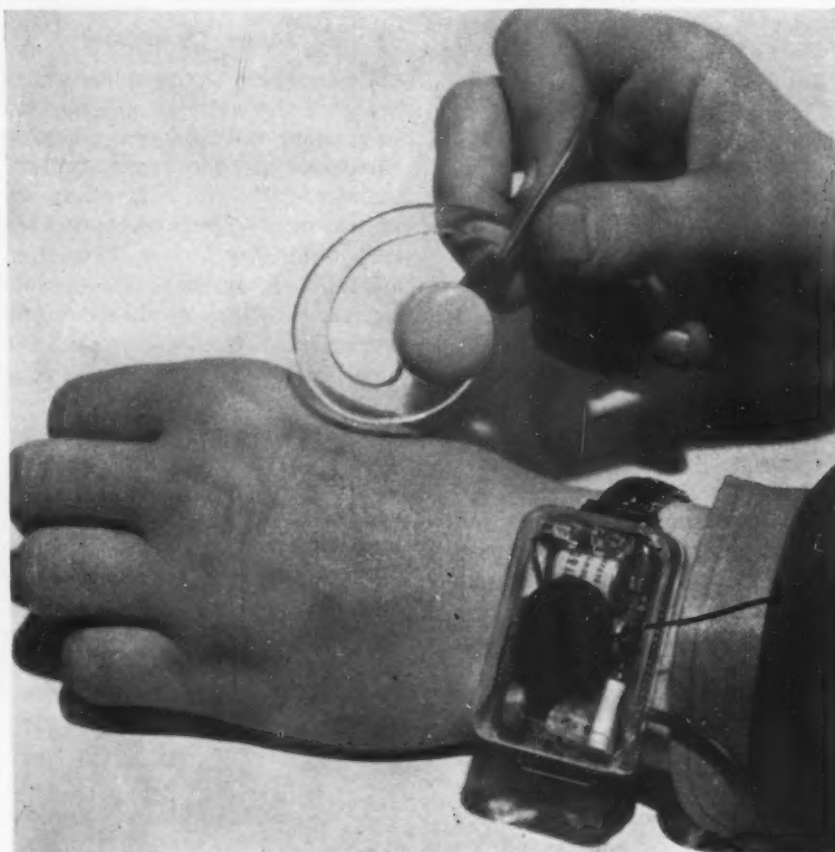
AEC will provide "a selection of nearly 1000 of the most significant unclassified and declassified reports prepared by the Commission and its contractors," Dr. Thompson said. Unclassified engineering drawings of equipment will be made available for the first time to interested industrial firms.

Speakers also outlined opportunities to firms that will never make direct use of atomic energy themselves but may become important suppliers of materials and equipment to the growing nuclear industry.

One of the biggest markets in this category is AEC itself. According to George C. Taylor, another AEC speaker, 1953 dollar volume of commitments for materials, supplies and equipment used in the atomic energy program was between \$800 and \$900 million. Commitments in 1954 are running at about the same level, he said.

About half of the 1953 figure was for construction of new plants and facilities now being built. Construction expenditure is expected to taper off in 1955 and subsequent years. But spending for products used in operating these plants will increase.

As well as telling prospective suppliers what AEC buys, the agency told them how to sell their products to government installations.



WRIST RADIOS, long a reality for Dick Tracy, may soon become standard equipment for Army Signal Corps. Broadcasts 40-miles away are audible.

Will Spring End Foundry Sales Slump?

◆ Overall first quarter foundry business has been about 20 pct under '53 levels. But this month has seen an order spurt, and an Iron Age check of the industry found castings producers generally optimistic over second quarter business prospects. Many are counting on a pickup in auto output.

◆ Producers of small gray iron castings have been the worst hurt, although all segments of the industry have felt the effects of slack auto, freight car and farm implement business. Auto die programs have helped some steel foundries, especially in the Detroit area.

◆ Competition and mechanization are the hallmarks of the foundry industry today. Customers' orders reflect short term inventory policies, with substantial lead times a definite feature.

"There's nothing sacred about our business," a Detroit foundryman declared last week.

That was his way of agreeing with the majority of his industry that business is off about 20 pct from last year. Foundries are generally reluctant to cry "wolf," however, particularly since a spurt in number of orders this month indicates the business ebb may be over.

But they are sitting tight, buying raw materials carefully. Meanwhile the business drop has brought back a hotly competitive market. Prices are being cut to customers and costs at home. This has brought wide introduction of automatic or mechanized equipment, emphasis on efficiency and quality, and, inevitably, layoffs of both hourly and salaried employees.

Tonnages Are Smaller

While first quarter '54 foundry business overall is about 20 pct under first quarter '53 levels, different segments of the industry account for different amounts of the slump. Sales of small gray iron castings are off 30 to 45 pct, but gray iron foundries generally report business off only about 15 pct from first period '53 levels.

Steel castings are lagging about 12 pct under the same quarter last year, while malleable, closely tied to automotive output, is off as much as 20 pct.

Recent splurge of new customer

orders is good, but involves smaller tonnages than were usual last year. One explanation generally accepted is that second half 1953 found most industries in a strong inventory position on castings and until December most purchasing agents were eager to reduce their castings inventories.

Readjust Inventories

Today these foundry customers are well through the pile-up, are re-entering the market at a buying rate based on short term inventory policies. And, too, a fair number of castings buyers underestimated their needs, expected a worse drop-off in business than actually occurred. Now they are hastening to work their inventories up to the new production schedules.



"Now they say robots will fill our jobs some day."

For instance, new gray iron foundry bookings are running into April. Industries are ordering delivery with a longer lead time than any period since September of last year. A considerable portion of the new business is merely old business that was deferred during fourth quarter 1953. But the mere fact that this jam of order holdups is breaking is regarded as a good sign. The same applies to part of the stepup in pig buying.

Gray iron foundries expect a 10 pct increase in production during second quarter. So far first quarter operations are about 15 pct below same period last year when 3,562,084 tons of castings were produced.

More Large Orders

Optimism generally is based on belief that automotive, machine tool construction, farm machinery and air conditioning industries will have to fatten inventories. Automotive disappointments have done more than anything else to cloud first quarter skies. Producers hoping for improvement in Detroit emphasize that an estimated 500 lb of gray iron castings go into the making of most passenger cars.

While there have been more cutbacks in the industry's labor force gray iron foundries have been averaging over 38 hours per week. Inventory shakedown has resulted in increase in volume of production orders with meat in them. Consumers generally are substituting larger orders for most of their patterns instead of spot orders for just a few.

Industry forecasts for the entire year are usually optimistic. In 1954 most gray iron producers expect total output to top 12 million tons. Last year total production was 13,630,000 tons. Both of these figures represent excellent business when compared with the 9 or 10 million tons generally rated "normal."

Producers of small gray iron castings estimate a drop in their

first quarter 1954 levels of anywhere from 30-45 pct below sales volume in the same period last year. For heavy castings producers the drop seems to have been considerably less, ranging from a low 10 pct to as much as 20 pct. On the basis of pig iron sales to the foundry industry, it's possible that light gray iron castings will recapture about one-third of that loss this month, and more next.

Steel foundries look for a second quarter pick-up in automotive and railroad demand, although auto firms still aren't doing much buying and freight car business is staying quiet. Compared with first quarter '53 sales of steel castings are off about 12 pct this year.

Steel castings producers have been able to effect some cost savings because of low scrap prices. Work week in most cases is staggered. Pittsburgh area foundries are especially hard hit, particularly since a depressed steel rate means fewer orders from mills for ladles, charging boxes and the like.

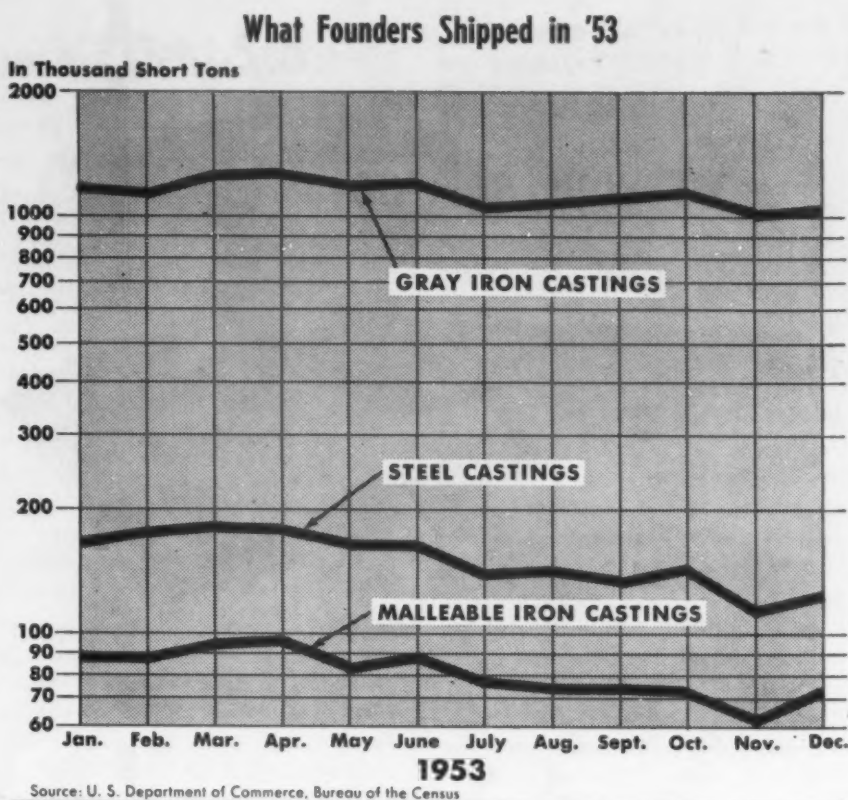
Not All Gloom

Exceptions to the general steel foundry pattern are the shops that make castings for automotive dies. These shops are enjoying one of their best years because of heavy auto industry die programs in preparation for extensive 1955 model changes.

But there are other bright spots in the general steel castings outlook. General bareness of consumer inventory bins seems to be the most hopeful sign. In most districts salesmen report consumers' inventory readjustment has just about been completed. Trimming operation has resulted in a slight pick-up in ordering patterns.

Inquiries haven't reached the flood stage but they are becoming more plentiful. In some areas, particularly Chicago, miscellaneous demand is considered good. Orders for items like gear blanks and valves have risen sharply. Some producers say hard first quarter selling is adding completely new names to customer lists.

Definite slow-up in automotive demand has cut first quarter mal-



leable sales volume at least 20 pct under comparable period last year.

Small companies relying mainly on miscellaneous, and farm and chain implements look for a good second quarter. Their outlook is generally more cheerful because of increased demand and inventory shakeout.

Labor force in malleable foundries has been cut about 5 pct within the past 6 months as producers drift between 3 and 5 days per week. Salesmen generally are pounding pavements hoping to win business from steel weldments and forgings. Depressed scrap market hasn't proved a boon to most malleable producers who refuse to tamper with melting formulas.

Meanwhile, foundries are going through the period of adjustment as are most suppliers of durable consumers goods manufacture.

"If we wanted to sing the blues because we aren't humping along like last year, we could," one pointed out. "But after all, 1953 was probably the second biggest year in history and maybe 10 to 15 pct lower is normal, if anybody knows what normal is anymore."

Planning:

Foundries emphasize new processes, more mechanization.

Foundrymen, despite current business ups and downs, are busy planning for the long haul, developing new processes and modernizing plant and equipment.

Foundry Equipment Manufacturers Assn. has reported value of net orders closed for new equipment in January 1954 as \$2,463,209. This was the best month, cashwise, for the foundry equipment industry since last August, and was exceeded by only one other month in 1953. Average monthly figure last year was \$2,016,245.

Foundries are putting their heaviest emphasis on developing new processes and on automation. Special attention is being given to shell molding, now a definitely accepted production method. One Detroit foundry reports that its program is starting to pay off in specialized parts. In the past 2

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CHARLES T. BRANDT, INC.
Baltimore 30, Md.

Production

years shell molded parts for one power steering unit have held up this section of the company, but at least ten new parts are expected to be shell molded by this company in the very near future.

"Of course, our shell molding is not expected to be competitive with regular castings and we have developed a set of rules that must be followed before it is practical," a company spokesman said. "We have to make a minimum of 3000 units and there must be big savings on machining."

This company saw the possibilities of shell molding over 2 years ago and went into it on a limited basis. Now it is able to show savings for other parts that are adaptable for shell molding and is ready to cash in on its experience.

Stress Automation

In the field of automation and mechanization, some foundries have made important strides, although some authorities on automation believe foundries generally lag behind other segments of industry in this respect.

One Detroit foundry is just completing a \$150,000 mechanical brass foundry as part of a \$500,000 expansion and modernization program. The foundry section of a large industrial engineering corporation reports many inquiries every week from foundrymen who want to talk mechanization. Automation such as that of the modern automotive engine plant has lagged behind other mechanical aspects of the foundry.

One drawback is that automatic equipment is expensive and only the larger foundries are in a position to talk real cost of automation. Even when large savings over a period of years can be shown, initial expense is often discouraging in spite of long term benefits.

Nevertheless, individual foundrymen are convinced that more mechanical handling is the key to lower costs that are necessary in today's competitive market and all trends are toward automatic processes and automation.

European Aluminum Doesn't Dent Steel

**Only 1.5 pct light metal tonnage now crowding steel markets
... ECE report predicts no great increase ... Believe Russia
planning 335,000 tons east of Urals.**

Only about 1 to 1.5 pct of European aluminum output is in actual competition with the Continent's steel industry, and there is little prospect of any great increase in the near future, a United Nations study finds.

A review by the Economic Commission for Europe disclosed last week that the major area of competition is in thin flat products. There aluminum is making its greatest strides. Current European output in this category represents about 3 pct of world thin flat products, according to the U.N. analysis.

Development of new aluminum products and extensive market research has forced the steel industry to step up similar programs. As a result, both industries may well expand together without seriously inconveniencing each other.

See Continued Growth

Long-term trends in world aluminum production show 10 pct increased output annually since 1900 or output doubled every 7 years. And this rate of growth is likely to be maintained in the 7 to 10 years ahead.

The bulk of expansion is expected to come from the U. S. But the Kitimat project of Aluminum Co. of Canada which may have 500,000 tons of new capacity in operation by 1958-1960 will be a major stride. The United Kingdom also has under consideration a major plan for the development of aluminum on the Volta River (Gold Coast). Initial plan is for 80,000 tons a year rapidly expanding to 120,000 tons with further prospective increases. France is also studying the possibilities of building a 100,000-ton unit in French Guinea and a 40,000-ton unit in the Cameroons.

In Western Europe generally

there are no or little expansion plans, with the exception of Norway and possibly Yugoslavia.

More Russian Capacity?

Definite information on U.S.S.R. and Eastern Europe is not available, according to the review. But the center of production in Russia is moving east of the Urals and 335,000 tons additional capacity is planned. Production in Asia and Latin America is likely to remain on a small scale in the near future except in Japan which is planning to rehabilitate most of its war-time installations and attain a total capacity of about 100,000 tons a year. In the more distant future, Brazil might become a major producer.

Use of light alloys on the railroads is likely to increase, particularly in passenger rolling-stock. Where rapid acceleration and deceleration are important, as in suburban lines, a major market is seen. But ECE thinks that since railway design is traditionally conservative, the inroads by aluminum at present prices will be limited for some time. Possibili-

ties in the motor vehicle industry are much better and could be a major threat to steel.

British Boost Freight, Scrap

Rail freight charges in Britain went up 10 pct last month to cover higher running costs and increased wages. The Minister of Supply also authorized an advance in iron and steel scrap prices based on higher transport costs. Increases range from 28¢ to 57¢ per ton of 2240 lb.

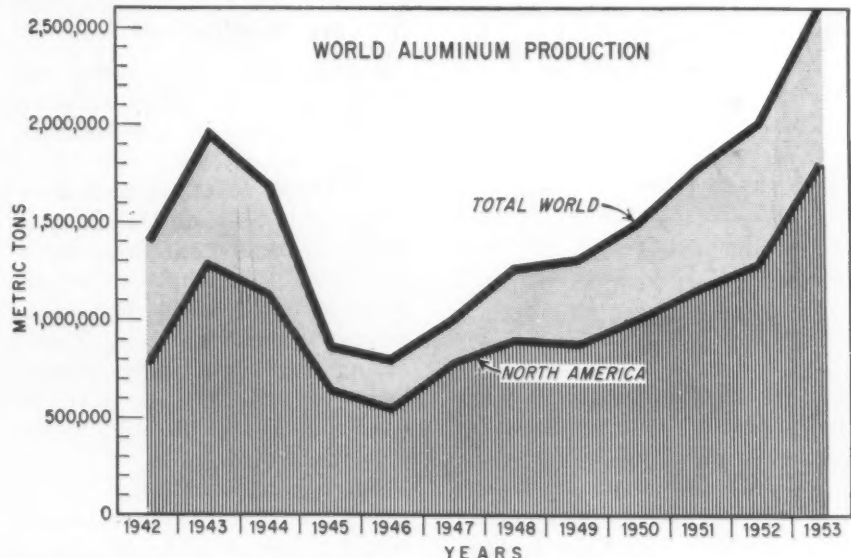
Some changes have been made in steel prices, but the effect of increased transport costs over the whole range of steel values is still under review.

Changes already made concern pig iron, alloy steel, blackplate, terneplate, certain categories of strip and stainless steels and warehouse extras.

The increases are basically predicated on higher production costs, and in the case of pig iron and warehouse extras, they also include the effect of the 10 pct increase in rail freight.

The Iron & Steel Board attributes current stable steel prices to the possible lower cost of certain imported products. The Board will continue to keep all costs under review and effect whatever adjustments in price may be necessary.

New price raised basic pig iron by \$1.96 per gross ton. Hematite pig iron is up by \$1.05 a ton.





Great Lakes freighters stay in berths as . . .

Lakes Ore Shippers Trim Sales

Shippers predict 73-million-ton year, down from record 95-million 1953 . . . Put emphasis on hauling efficiency . . . Retirement of older vessels seen—By R. M. Lorz.

Great Lakes shippers have trimmed sails in preparation for the 1954 ore season. Judged by performances in most years past this season's total haul on the Lakes shouldn't be skimpy. But it will fall far short of the 95,844,449-ton record pace set last year.

Bulky inventories piled up at mills and Lake ports and cutbacks in steel production have punctured all-out optimism on the Lakes for the first time since before World War II.

Usual spring guessing on eventual '54 tonnage brings forth estimates ranging from 70 to 80 million tons. Most informed sources believe this year's haul will fall just short of 75 million tons.

Starting Date Delayed

Reduced goal has been set by shippers who anticipate a much shorter season. Ordinarily ore vessels move out for Lake head in early April. This season most fleet operators don't intend to transport initial payloads until sometime

after May 1. It will be the latest spring date in over 15 years.

Mountainous inventories remain the big factor. On Mar. 1 Lake Superior Ore Assn. reported a total of 36,385,842 gross tons of ore on hand on Lake Erie docks and at furnaces in the U. S. and Canada. On Jan. 1, 1954, ore stockpile totaled 48,815,444 tons.

See 73-million-ton Year

During the first quarter this year most Lake shippers believe mills will consume approximately 20 million tons. With only 147 of 205 furnaces (that use Lake Superior ore) in blast on Mar. 1, many vessel operators see shipment of about 54 million tons—or a monthly average of 6 million tons in the remaining months of 1954. If mills intend to maintain year-end inventories at 1953 level, then an annual shipment of 74 million tons seems indicated.

Fairly constant relationship between annual ingot production and yearly shipments of Lake Superior

Ore Shipments vs. Steel Output

Year	Lake Superior Ore Shipments Gross Tons	Steel Production Net Tons
1950	78,205,592	96,836,075
1951	89,092,012	105,199,846
1952	74,910,798	93,156,375
1953	95,894,449	111,609,719

ores also points to total shipment somewhere in the mid 70's. Since 1950 annual ingot production has outdistanced Lake Superior shipments by about 17 million tons each year. Therefore, if steel production hits 90 million tons this year, as many producers believe it will, a total ore shipment in the neighborhood of 73 million tons seems likely.

Shippers willing to risk an opinion are quick to point out that a pick-up in steel business could make current estimates melt as quickly as Lake ice in mid-April.

Lake carriers will be more than able to deliver the goods whatever the need. Last year the 286-vessel ore fleet moved almost 96 million tons without hauling a ton in December. Actually about 105 million tons could have been delivered if the fleet had worked for the full season.

276 Available Now

This season should get underway with a total of 276 carriers in operation. Retirement of older vessels in favor of speedier 20,000-ton carriers may cut the total fleet. But in any case retirement of smaller vessels is not a strong indication of shipment volume. While some pessimists anticipate laying up 20 pct of their fleet the industry generally is looking forward to more efficient operation through use of bigger, faster boats.

There will still be a lot of ore on the docks when Pittsburgh Steamships' 59-vessel fleet raises anchor Apr. 20. But as one shipper told THE IRON AGE, "It won't be the best year we have ever had but it won't be the worst by a long shot."

Freight Cars:

Propose stock piling to guarantee filling defense needs.

Stockpiling of freight cars for national defense is the latest plan under consideration by government mobilization officials.

It has now become plain that as things stand, Class 1 railroads stand no chance in the foreseeable future of building up their freight car ownership to the 1.8 million level—which mobilization agencies say is an absolute security minimum.

This is pointed up by recent surveys by the Securities & Exchange Commission indicating railroads plan to cut back 1954 capital expenditure to \$950 million from the 1953 figure of \$1.3 billion.

100,000 Short of Goal

Class I ownership stood at about 1.7 million cars at the beginning of the Korean war. This has been increased by 50,000 units, leaving the roads short of the defense figure by 100,000 units.

Freight cars produced from Jan. 1, 1950 to Feb. 1, 1954 amounted roughly to 302,000, according to figures submitted to Congress by the Defense Transport Administration. These figures indicate orders for only 134,000 new cars would be needed to complete the goal, of which 28,000 were already on the books of the car builders.

Have No Choice?

From a more realistic standpoint, actual deliveries of new freight cars have averaged slightly more than 6000 a month for the past 12 months, or just about 1000 a month more than are being retired. February backlog dropped to 24,441 cars.

If the railroads can't or won't acquire enough freight cars to provide the estimated defense minimum, says Defense Transportation Administrator Chief James K. Knudson, the alternative—distasteful as it may be to Congress—is government stockpiling.

Develop Commercial Auto Gas Turbine

Chrysler now testing sports coupe with turbine power plant . . . Poses many complex problems . . . Claim conventional engine fuel economy—By R. D. Raddant.

Chrysler Corp., the dark horse in the gas turbine field, has developed the first gas turbine to power a conventional production car.

A Plymouth Belvedere sports coupe with the new gas turbine engine is now undergoing tests at the Chrysler Proving Ground. According to Chrysler engineers, it shows fuel economy equal to that of a conventional engine and has an exhaust discharge cooler than that of the average car.

Warns of Problems

Lack of economy and a prohibitively hot exhaust have been considered two of the major obstacles in the way of gas turbine use for passenger cars.

But while James C. Zeder, Chrysler vice-president and director of engineering and research, was moved to call the new car "a milestone in motive power engineering," he was cautious to warn that "complex metallurgical and manufacturing problems" stand in the way of general use. Among the problems is the limited supply of materials used in the turbine. Many are currently earmarked for defense use.

In producing the gas-turbine-powered Plymouth, Chrysler stole a march on Ford and General Motors.

Ford has yet to produce any gas turbine car while GM's Firebird is a fantastic styling attraction for the auto shows rather than an attempt to demonstrate any practical move toward gas-turbine-powered transportation.

Uses No Radiator

The Chrysler turbine is rated at 120 shaft horsepower, but because of torque characteristics delivers the same performance to rear wheels as a 160 hp engine with transmission. Unlike a piston engine, it delivers its highest torque from a stationary position.

Because combustion is continuous, the turbine-powered car is virtually vibration free. It requires no radiator or liquid cooling system.

In dimensions, the Chrysler turbine, with its set of reduction gears, is only 32 in. long, 33 in. wide, 28 in. high. George J. Huebner, Jr., executive engineer in charge of research, directed the design and laboratory test work on the turbine. He says it is almost 200 lb lighter and has less than a fifth as many major moving parts as a piston engine of similar power.

Burns Many Fuels

The principal problem to Chrysler engineers was to develop a heat exchanger of the required efficiency and capacity to fit into a car of standard size. That is why Chrysler engineers call the heat exchanger or "regenerator" used in the turbine the key factor.

In proving ground tests, the Chrysler engine burned straight run gasoline, carried in a standard 17-gal Plymouth fuel tank. However, a wide range of petroleum fuels may be used, from gasoline to heavy fuel oil. The turbine's electrical system consists of a storage battery, starter-generator, coil, breaker, and a single spark plug which is used only in starting.



"Does the work of two men."

THERE'S MORE TO THIS THAN MEETS THE EYE



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CAST, NON-
FERROUS

RINGS, ROLLS,
LINERS, TUBES,
BUSHINGS,
BEARINGS
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Raw Materials

Metals:

Scrap dealers predict good business, high exports.

Nonferrous scrap metal dealers are looking forward to a generally good business year, with volume bolstered by increasing export demand, industry leaders reported to the National Assn. of Waste Materials Dealers, meeting in New York last week.

Renewed export demand started to play an important part in keeping the metals scrap market firm last fall, said Henry S. Klingenstein, retiring president of NAWMD's metals division. At that time, rebuilt industry in Germany, Japan, and other countries created a huge demand for copper, brass and aluminum scrap just as domestic consumers were beginning to trim their buying.

All indications are that this export demand will continue, probably at increased tempo. This plus expected slight increases in domestic demand, should assure dealers of a good year, although possibly slightly beneath 1953's level.

Ask Ingot Piling from Scrap

Government stockpiling of steel ingots from dealer scrap was sought last week by the Institute of Scrap Iron & Steel. The ISIS board of directors meeting in New York adopted the resolution as a means of alleviating the current scrap industry decline in business.

The directors also urged:

- Removal of certificate of availability-inspection requirement for export of scrap and extension of validity period of licenses.
- Exploration of formation of private corporations through stock subscription to provide financing for the industry.
- Continued effort to get loans through Small Business Administration.
- Obtaining greater recognition of scrap as fundamental collateral by private lending institutions.
- Continued program for lower freight rates on scrap.

Stampers Stress Sales, Costs, Stocks

Believe hard selling, good cost accounting will regain 15 pct dropoff in first quarter . . . Suppliers to Big Three auto firms do well . . . Radio, TV volume down—By R. M. Lorz

There is nothing wrong with the stamping industry that hard selling and cost accounting won't cure. First quarter order volume has been off an estimated 15 pct. Job stampers depending mainly on automotive and appliance demand are in some instances saying their operations have been hit even harder.

In some areas radio and TV demand is off as much as 40 pct compared with 1st quarter last year. Midwest jobbers with most of their eggs in the independent automotive basket report sales volume off more than 50 pct.

Does this mean stampers are experiencing a full grown recession? Members of the Pressed Metals Institute who attended the institute's 5th annual spring technical meeting say no. If there are any business corpses around next December stampers unanimously think they will be victims of inefficiency.

Capital Reserves Healthy

So far the mortality rate in this primary industry is nil. Healthy capital reserves have tided some firms over. Others doing as well or better than last year explain success by defining the basic nature of the stamping industry. While some firms supplying automotive independents are hurting others with lush contracts from Detroit's "Big 3" are making hay. While one firm bogs down on customer service and design, another has gone out and taken orders away from castings makers. While some firms seem content to stand pat, others are expanding and modernizing.

Stampers in every part of the country know the prize will go to the swift. Those who talked to THE IRON AGE at the recent Cleveland Convention definitely intend to capitalize the "C" in competi-

tion. Since just about everyone in the industry expects 1954 stamping business to run at least 10 pct below last year most stampers are concentrating on 4 basic approaches: (1) hard selling, (2) well planned materials handling, (3) retooling and expansion and (4) development of end products.

At least two producers interviewed by THE IRON AGE said they had fired salesmen within the past month. One salesman who retreated because a competing firm quoted a lower price on a particular job is probably still wondering what happened. Examples like these don't indicate birth of a "get tough" policy in the stamping industry. But they point to an end to the national order taking siesta.

It is a well known fact in the industry that handling costs contribute more to general overhead than direct labor costs. In order to pare this cost most firms have overhauled materials flow.



UNION GUARDS eject United Electrical Workers organizers from UE Local 101 in Schenectady. Local is trying to bolt UE, join CIO.

Retooling and expansion are also subjects of real concern to most stampers. While there is some hesitation about future tax programs many stampers have either moved into new plants or expect to modernize. The vice-president of a large eastern firm told THE IRON AGE his company had earmarked \$200,000 for expansion in 1954. Owner of another eastern shop reported he had just started operations in a new plant which was keeping his jobbing quotations highly competitive.

Seek New Products

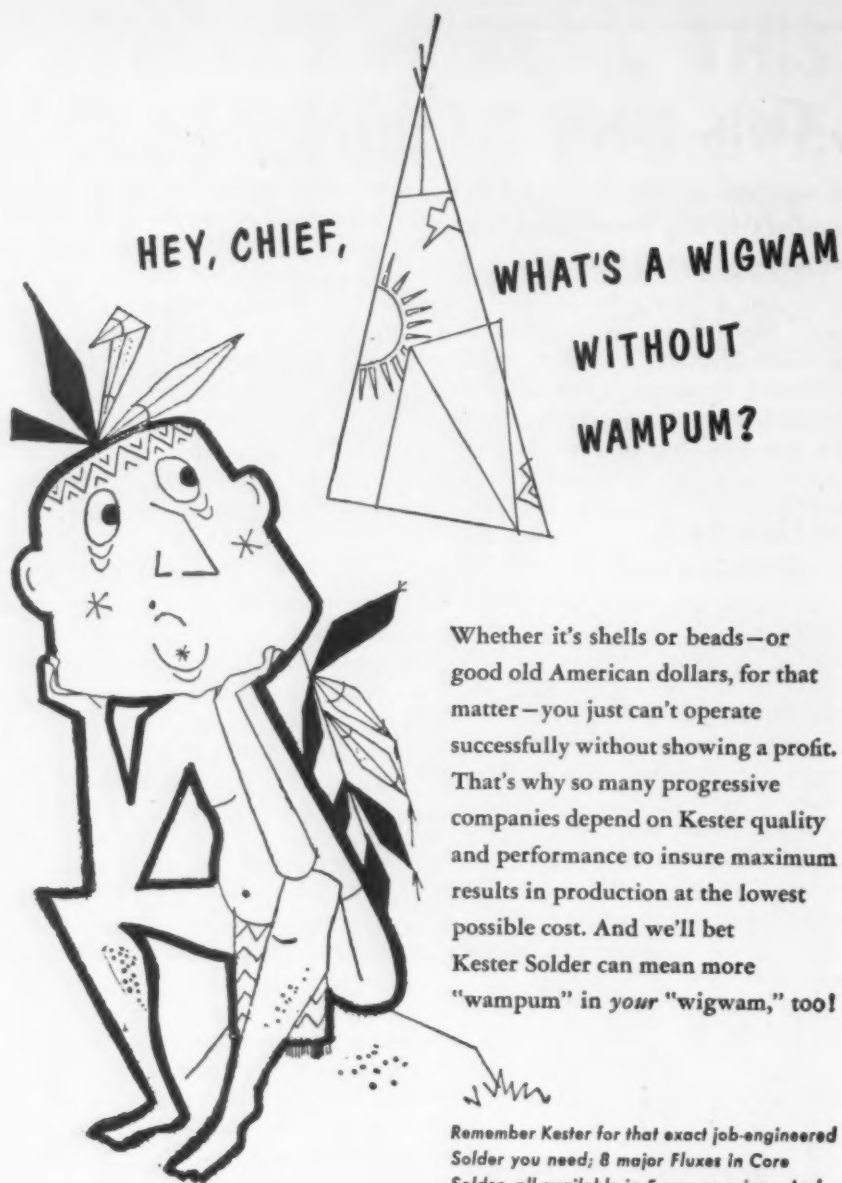
Increased emphasis on end products is a natural development. Job stampers who fail to come up with a product or two of their own will obviously be more at the mercy of economic shifting.

Cost conscious stampers are also cutting inventories. A year ago stampers who attended the annual PMI tech session were crying for hot and cold rolled sheets. Since then inventories have generally moved into balance. By early summer strip users were in an easy position. A few months later sheets came into balance. Many stampers expect to hit bottom within two months.

Bottom in most cases means 30 day stocks. Firms now busy emptying shelves have no qualms about putting a tight rein on inventories. Mill and warehouse steel are both easy to get without paying quality and quantity extras. General easiness of the steel supply picture has actually embarrassed a few stampers who went out a year ago and loaded up on foreign steel.

If you ask most stampers how the advent of more captive stamping shops might affect their business they automatically summarize their outlook for 1954. In the words of a Chicago delegate:

"The age of specialization is our trump card. We can stamp out parts more economically than even the largest corporation. As long as we give them a reasonable price and good service we're going to do business and will have nothing to fear from the big fellows."



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Expansion

Capital Goods:

Industry will spend almost as much this year as last.

Although it expects the steel and nonferrous industries to invest 25 pct less for plants and new equipment, the Federal Government is confident that 1954 capital investment by industry as a whole will run close to last year's record \$28.4 billion.

Latest look at announced industry plans shows that as of now, about \$27.2 billion worth of spending for plants and equipment has been programmed.

This is about 4 pct less than the investment rate last year. But it is considered possible that new programs as yet unannounced may pull the final figure above the \$28 billion mark.

Auto Firms To Spend More

Manufacturing industries as a whole have programmed only about \$11.4 billion worth of expenditure, about \$800 million less than last year. Largest reductions will be made by durable goods manufacturers.

About the only exception in the durable goods category will be the automotive industry and its related groups, where new capital outlays are scheduled at 20 pct more than in 1953.

Motor vehicle and equipment manufacturers plan to invest close to \$1.5 billion in new plants, new tooling, and other equipment.

Railroads have scheduled the sharpest cutbacks, percentage-wise—about 28 pct.

Containers' Volume Picking Up

More business is in sight during 1954 for the container and packaging industry than in 1953.

This is the opinion of industry representatives who met last week with Business & Defense Services Administration to discuss industry problems.

Basis of the forecast is that the industry registered a higher business volume during February than last year plus buyer optimism.

BENEFITS: Must Be Tailored to Fit

AMA studies benefits . . . Hears Ford men stress research in meeting group insurance needs . . . Standard Oil's thinking on problem of funding successful retirement programs.

Development of sound programs for group insurance and retirement was the subject of interest for 700 business men at a 2-day conference held by American Management Assn. in New York last week.

The first day's session, devoted to group insurance, was begun by M. A. Themer of Ford Motor Co.'s statistical analysis section, who outlined the objectives of group insurance as a means of helping employees meet emergency situations and thus provide employers with a more stable and efficient work force.

Review Special Problems

After determining top management policy on such essentials as financing methods, cost limits and areas of coverage, Mr. Themer advised that a research committee be set up to make a thorough study of conditions affecting the company's insurance problems and to make detailed recommendations for a specific group insurance program.

Some of the special considerations that should be kept in mind were outlined by Mr. Themer. Among these were: (1) Need to establish different amounts of benefits for different earnings classes; (2) because earnings are taxable and benefits not, a given amount of dollar benefits is usually worth more than equivalent earnings; (3) with advanced age of employees the need for life insurance protection diminishes, therefore life insurance for retirees need not be so great as life insurance for younger, active employees.

Mr. Themer concluded by stressing the need for both a periodic inventory of the group insurance program's effectiveness and a continuous review of new or proposed federal, state or local legislation on matters affecting insurance, such as the recent proposal for federal

re-insurance of major medical expense benefits.

Budgeting the group insurance and selecting the most efficient and economical carrier company to underwrite and aid in administration of the program was discussed by Roy L. Jacobus, manager of Ford's insurance department.

How To Underwrite

Effectiveness of competitive bidding as a means of examining various cost factors with several possible insurance carriers was stressed by Mr. Jacobus:

"The best way to get an accurate comparison is to have all proposals based upon the same assumption as to premiums, paid claims and the like, for your group. With identical data, the bidding carriers should illustrate how application of their current cost factors would work out over at least a 10-year period."

Robert T. Ross, manager of Ford's Employee Services Dept., outlined merchandising a benefit program to employees:

"Putting across an initial benefit solicitation in a large company is not too dissimilar from any selling campaign. Actual presentation to the employee should be conduct-



"I can't see where that policy is an advantage. He can't support us now and he walks, talks, moves around . . ."

ed by members of management—preferably by the employee's immediate supervisor."

Leader of the discussion of retirement programs on the second day of AMA's benefits conference was C. Henry Austin, manager of the insurance department of Standard Oil Co., of Indiana.

Mr. Austin emphasized the importance of the executive responsible for administration and supervision of a benefit program. He stressed the basic factors which must be considered in calculating the cost of a pension plan: Mortality, interest, expense, turnover and future change in salary levels.

Which Funding Method

There are two methods of funding pension plans, Mr. Austin pointed out. The plan can be trusted in almost any pattern to fit the circumstances of the individual employer, or it can be insured by a regular life insurance company.

When an insured plan is used three types of expenses must be considered: Commissions paid to brokers; state premium taxes; and administrative expenses which cover a variety of handling costs.

Expenses of a direct trust-fund pension plan consist of the trustee's fees and administrative expenses.

'Hit and Run' Strikers Lose

Employers are within their rights, National Labor Relations Board says, if they fire employees who engage in "hit-and-run" strikes or who refuse to cross picket lines during such strikes.

A "hit-and-run" strike, by NLRB definition, is a series of single, short, unannounced walkouts staged to harass management.

In a 3-to-1 ruling last week, NLRB stated that a strike of this type is a "form of economic warfare" which should not be classed with legitimate types of strikes. The ruling was given in a case wherein the Order of Repeatermen and Toll Test-board Men (Ind.) had charged Pacific Telephone & Telegraph Co. with unfair labor practice.

Inventories Plague Tinplate Mills

December's strike left canmakers with rafter-high stocks . . . Fat should be off by July . . . Mills see '54 almost equalling '53 . . . Electrolytic use grows—By J. B. Delaney.

Tinplate producers are still feeling effects of last December's can company strike. Mountainous inventories built up during the month-long walkout against 63 plants of two major canmakers are the industry's biggest problem.

Once these stocks are worked down to manageable levels, perhaps by third quarter, producers look for a decided upturn in new business. They see no reason why can production in 1954 should be off greatly from last year.

Work Off Inventories

The can strike served to aggravate an inventory-correction move that was already in progress when it hit. Consumers were overloaded with material shipped earlier in the year as a hedge against a possible steel strike. During the can walkout the mills continued to produce, and their own warehouses were stacked to the rafters.

Now the can companies are working off these inventories. And apparently consumers are counting on a peaceful settlement of steel wage negotiations this summer.

Last year was the first since the war that can companies were in a position to build inventories appreciably. Unsettled labor conditions in the steel industry plus the Korean war forced consumers to struggle along on relatively skimpy stocks.

Producers Are Optimistic

Present market conditions are a reversal of what the industry has come to accept as normal. Usually, shipments in second quarter are the high spot of the year as canmakers prepare for crops that will be harvested during the summer and fall. Third quarter also is a good period for producers.

But this year consensus is that second quarter business will be little better or about on a par with first quarter. A pickup is looked for in third quarter. Operating rate in

the January-March period will be about 80 pct.

For the year as a whole, producers are far from pessimistic. One source predicts an operating rate of about 75 pct, slightly off from 1953. Present industry capacity is 135-140 million base boxes, about 90 million in electrolytic. Shipments

Electrolytic Tinplate Output

Pct of Total Output

Year	Pct
1953	71.8
1952	67.5
1951	64
1950	60
1942	3.3

Source: AISI. Compilation: The Iron Age

last year were 5,413,000 tons, with electrolytic accounting for 61.8 pct, hot-dipped 24.3 pct, and black plate 13.9 pct.

Electrolytic Keeps Growing

The export market shows signs of reviving after some months of poor demand. Second quarter export business is expected to show improvement over first quarter. Warehouse sales are off.

As expected, electrolytic tinplate made further inroads into applications formerly considered too severe for anything but hot-dipped. Electrolytic shipments amounted to 71.8 pct of coated products, compared with 67.5 pct during 1952.

Dual-coated electrolytic plate is here to stay. The 1.00-lb electrolytic in place of 1.25-lb hot-dipped gained greater acceptance during 1953. This electrolytic product not only is replacing the hot-dipped in many applications, but the price is 10¢ per base box less—\$8.60 per base box, or \$1.20 over the electrolytic base of \$7.40 for 0.25-lb electrolytic.

Pentagon Cuts Paper Work

Use of a new simplified reporting form will provide up-to-date information on production of defense items and save the military \$500,000 a year by reducing paper work, according to Pentagon estimates.

Five reporting forms previously used are replaced by the single form, which establishes a production scheduling system for a list of 550 products essential to military programs.

On the list are planes, armored and unarmored vehicles, weapons, ammunition and electronics equipment.

Contracts Reported Last Week

Including description, quantity dollar values, contractor and address. Italics indicate small business representatives.

Maintenance parts for F9F aircraft, V, \$86,757, Grumman Aircraft Engr. Corp., Bethpage, L. I.

Trailer, floodlight, portable, 52 ea, \$80, 893, The Roflan Co., Topsfield, Mass.

Cylinder, hydraulic, V, \$398,395, Weston Hydraulics, Ltd., N. Hollywood, Calif.

Inverter & spare parts, V, \$1,045,303, Leland Electric Co., Dayton.

Pumps for various aircraft, V, \$59,529, Adel Div., General Metals Corp., Burbank, Calif.

Stand, test, aircraft generator and assy, V, \$112,459, United Mfg. Co., Hamden, Conn.

Spare parts used on P & W engines, V, \$133,502, United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford, Conn., *J. M. Lemon.*

Material for use on P & W engines, V, \$283,979, United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford, Conn., *J. M. Lemon.*

Spare parts for support of P & W engines, V, \$58,089, United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford, Conn., *J. M. Lemon.*

Spare parts used on P & W engines, V, \$280,651, United Aircraft Corp., Pratt & Whitney Aircraft Div., East Hartford, Conn., *J. M. Lemon.*

Automotive spare parts, 8 st, \$266,093, GMC, GMC Truck & Coach Div., Pontiac, Mich., *J. P. McManus.*

Vehicles for marine corps, 20, \$986,968, GMC, Pontiac Motor Div., Pontiac, Mich., *J. P. McManus.*

Automatic data recorders, 3 ea, \$230, 253, The Austin Co., New York.

Special tools and group handling equip to support Model J40 engines, Lot, \$100,000, Westinghouse Electric Corp., Washington.

Oxygen regulators, 1200, \$229,200, Bendix Aviation Corp., Eclipse-Pioneer Div., Teterboro, N. J.

Sector gear assy, 78 ea, \$104,014, Universal Gear Works, Inc., Detroit.

Grenade, hand, riot, 188000, \$337,930, Eldon Mfg. Co., Los Angeles.

Spare parts for generator set, lot, \$106, 816, R. H. Sheppard Co., Inc., Hanover, Pa.

Maintenance parts for power unit, 10t, \$70,698, Garco Corp., Seattle.

Railway car, tank, 5 ea, \$124,600, American Car & Foundry Co., New York.

Diesel engine, 2 ea, \$90,750, General Electric Co., Phila.

Motor generator sets, 41 ea, \$220,315, Bogue Electric Mfg. Co., Paterson, N. J.

Signal generators, 95, \$119,611, Bruno-New York Industries Corp., New York.

Cable, lighting and power, 53000 ft, \$94,181, Phelps Dodge Copper Products Corp., New York.

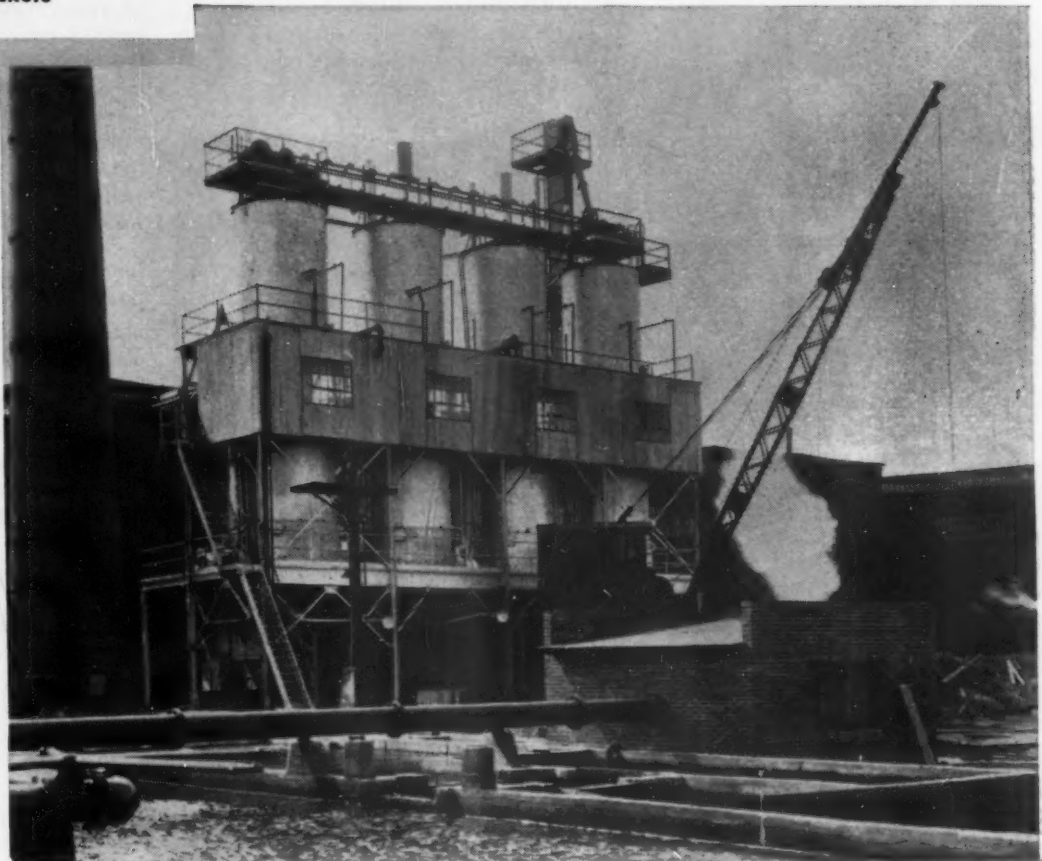
Repair parts for diesel engines, 60422, \$212,173, Fairbanks, Morse & Co., New York.

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Industrial Briefs

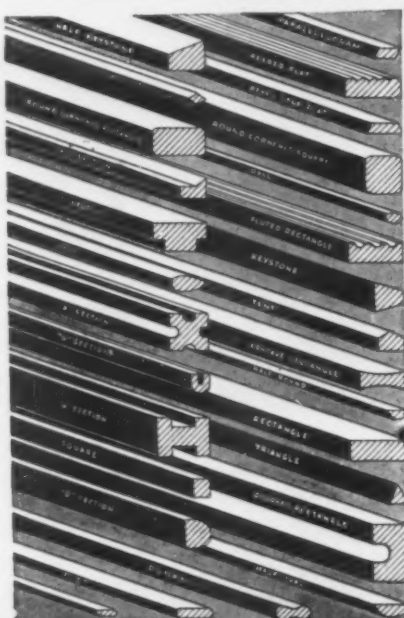
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Named . . . RADIO-ELECTRONICS-TELEVISION MANUFACTURERS ASSN. has named Virgil M. Graham head of the RETMA Engineering Dept.

Presented . . . WALTER KIDDE & CO., INC., Belleville, N. J., was presented with the National Safety Council's highest commendation, The Award of Honor, in recognition of the company's reduction of accident frequency and severity rates.

Purchased . . . KAISER STEEL CORP., Oakland, Calif., has purchased approximately one-third of the common stock of the Myers Drum Co. of Oakland.

Third in Series . . . The third in a series of "traveling clinics" on material handling problems scheduled by THE MATERIAL HANDLING INSTITUTE will convene Apr. 15 at the Congress Hotel, Chicago.

Two More . . . GRANCO STEEL PRODUCTS CO., a subsidiary of the Granite City Steel Co., has appointed Fireproof Products Co., New York, and Taylor-Davis, Inc., Manayunk, Pa., as sales representatives for its "Cofar" Div.

Contract Awarded . . . BLAW-KNOX CO., Chemical Plants Div., Pittsburgh, has been awarded a contract for engineering and design of modifications to the chemical processing plant at the Atomic Energy Commission's national reactor testing station in Idaho.

Erecting . . . FERRO CORP., Cleveland, will erect a new plant for a Porcelain Enameling Div. for The Rheem Mfg. Co., Chicago.

West Coast . . . DRAVO CORP., Pittsburgh, has opened a West Coast office in the Monadnock Bldg., 681 Market St., San Francisco, Calif.

Regional Office . . . ROCHESTER PRODUCTS, division of General Motors, Rochester, is opening a regional sales office in Detroit. The office, first of its kind established by Rochester Products, will handle both welded and brazed GM steel tubing, as well as Rochester carburetors and cigar lighters.

Field Office . . . CRUCIBLE STEEL CO. OF AMERICA, Pittsburgh, has opened a new field office in Columbus, Ohio, at 81 East State St.

Next Month . . . More than 1000 top engineers, production men, and executives from 750 leading U. S. companies engaged in aviation work will meet Apr. 12 in the Hotel Statler, New York, for the second annual Aeronautic Production Forum in a joint endeavor to achieve the greatest degree of national defense at the smallest cost in dollars.

Service Buttons . . . ROCKWELL MANUFACTURING CO.'s Meter & Valve Div. awarded C. K. Madison, Midwest regional sales manager, a 25-year service button. M. D. Gilbert, Kansas City district sales manager, received a 30-year one.

Work Begun . . . CATERPILLAR TRACTOR CO. has begun site preparation work for its new plant at Decatur, Ill.

Elbow Room . . . BAY STATE ABRASIVE PRODUCTS CO. has expanded its Chicago facilities with a new office and warehouse at 3701 West 49th St. for better service to customers in the Midwest area.

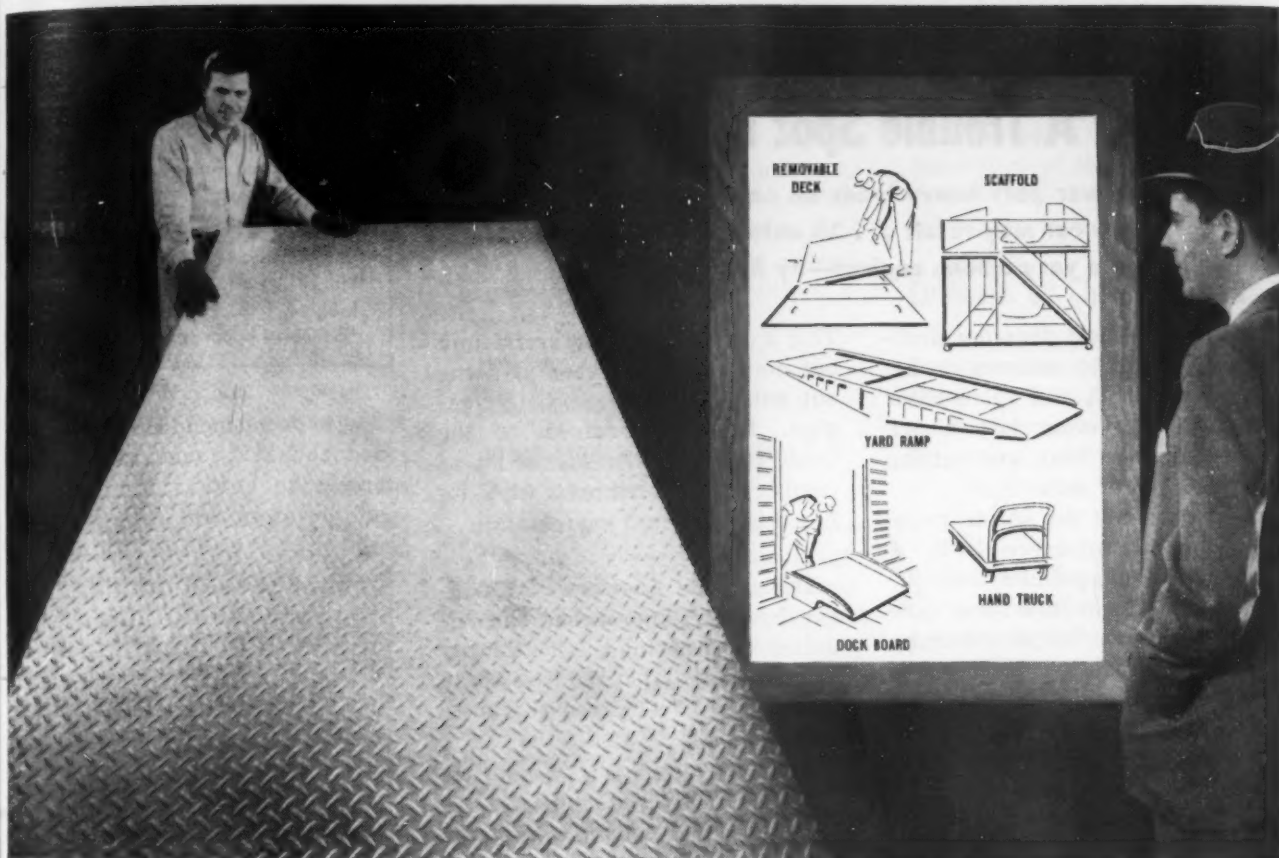
Appointment . . . PRESSED METAL INSTITUTE, Cleveland, has appointed Harold A. Daschner as assistant manager.

Opened . . . AIRSUPPLY CO., a division of The Garrett Corp., Los Angeles, has opened an office in San Mateo, Calif., to serve the San Francisco Bay area. Alexander M. Allan has been named to head the office, located at 235 Third Ave.

International . . . A Foreign Trade Center will be set up at the First International Instrument Congress and Exposition in Philadelphia, Sept. 15-21 which is sponsored by the INSTRUMENT SOCIETY OF AMERICA.

Newly Established . . . CANADIAN COUPLING & FITTINGS LTD. has been formed to establish and operate a plant at Simcoe, Ont. George E. Lourie is vice-president of the new company.

Scholarship . . . FORT PITT BRIDGE WORKS, Pittsburgh, has established a scholarship at Lehigh University. The first award will be made in September 1954 to a junior enrolled in the civil engineering curriculum.



Take a new look at magnesium . . . wherever equipment must be lifted or moved. Today, more than ever before, magnesium can help you design for greater savings in weight, greater economy in fabricating costs.

LIGHTWEIGHT MAGNESIUM TREAD PLATE

NOW AVAILABLE IN NEW SIZES AND GAUGES

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For example, Dow magnesium tread plate made to the famous "Inland" 4-way design is available in lengths up to 16 feet . . . in widths up to 6 feet . . . in thicknesses up to 2 inches. This is important news for every designer.

These larger sizes mean faster, more economical fabrication *plus* new design opportunities in the field of materials

handling. Look to magnesium wherever weight and motion are important use factors.

There is a place for tread plate made of magnesium, *the world's lightest structural metal*, almost everywhere, in every plant, every industry.

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The Automotive Assembly Line

Camshaft A Trouble Spot in HP Race

High power puts heavy loads on cams, valve lifters . . . Excessive wear may result . . . All automakers face problem . . . Oil needs vary among engines—By R. D. Raddant.

One of the most pressing problems of the auto industry is excessive camshaft and valve lifter wear that may occur in the high output engines that are setting the pace in the industry.

And probably no single problem is more controversial. It involves different policies both between and within individual companies as well as the petroleum industry whose job it is to make the lubricants.

The basic problem is an old one with the industry, but it has been aggravated by the overhead valve, high compression, high horsepower engine. Spring loads on the valve lifters have increased tremendously as have the cam loads. The industry has been hard pressed to keep pace with these increasing loads to prevent excessive wear on the cam lobes and valve lifter faces.

Problem Is Complex . . . Almost every maker of a new V-8 will admit that the problem arose when the engine was introduced. Few will admit that the problem hasn't been solved, although that is an over-simplification of the situation.

There are so many variables involved that it is difficult to state the problems simply. The most important problem is whether or not the solution lies with the petroleum people to develop the lubricants, or with engineers or metallurgists to develop cams and lifters that won't wear or score.

With the first high performance engines developed by General Motors, the petroleum industry went into additive oils. But the unpleasant fact is that while one additive oil may work well with one engine, it raises hob with another.

This a second manufacturer found out to its sorrow when it came out with a high performance engine. It is well known to the trade that Chrysler had a lot of trouble in this respect with its first high powered engines.

Design One Answer . . . Chrysler, however, approached the situation by changing the metallurgy and construction of the lifters and appears to have solved the problem to its satisfaction.

But this brings the oil additive situation to a head and it raises a problem that confronts the auto buyer as well as the auto engineer. As one top engine man told THE IRON AGE: "The choice of additive oils is like the choice of some of these trick medicines. Sometimes the result of the additive may be worse than the original trouble."

And engine specialists have their preferences of oil brands that will work well with their engines and certain knowledge of those that won't. However, auto companies are bound by laws and regulations that make it inadvis-



Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Mar. 20, 1954..	129,071*	24,899*
Mar. 13, 1954..	119,307	24,171
Mar. 21, 1953..	136,300	33,623
Mar. 14, 1953..	134,152	31,610

*Estimated. Source: Ward's Reports

able to recommend the type of oil that should be used, particularly a specific brand. They can tell you privately, but that's about all.

Called "Premature" . . . Privately, many Ford and Chrysler engineers blame the use of additives, which they call hasty or premature, on General Motors. However, this is a matter of opinion and only illustrates the competitive nature of the industry.

Ford, which was the latest to introduce a new engine, logically is the latest to confront the problem. Ford engineers are frank to admit they still don't have it at the point where it can be called completely solved.

"We consider anything over 0.5 pct failures a critical problem," said V. G. Raviolo, executive engineer, engines, of the Ford Engineering Staff. "We are still slightly over that."

It should be impressed this shouldn't reflect on the Ford engine. It is known that others have, or have had even more trouble.

Ford uses an unhardened camshaft that develops as much chill as possible without hardening. The emphasis is on developing a favorable microstructure. Elsewhere in the industry, camshafts are either induction or flame hardened.

Use Different Materials . . . A big difference of opinion also exists on the valve lifter construction, with cast iron, steel, and hardenable iron all being used.

The only conclusion that can be drawn is that it is still a serious

problem, perhaps critical, and that close cooperation between auto engineers and the oil manufacturers is needed. Some clarification of additives is also advisable.

Premature failures of camshafts and tappets is a serious thing and an expensive one to everybody.

V-8 for Corvette, Maybe . . .

Look for Chevrolet's V-8 engine, which will be introduced on standard 1955 models, to make an early appearance in late summer on the Corvette.

This is completely unconfirmed by Chevrolet, but is so logical a move that it deserves reporting. Putting the new engine in the Corvette would not at all interfere with the regular line of bread and butter sales, but at the same time would provide an ideal show-place to advertise its power and performance in advance of '55 model introduction.

Chevrolet probably won't completely scrap its present 6-cylinder engine with the introduction of the V-8 for two reasons. It is doubtful that tooling could be completed to turn out engines for all the 2 million or so cars that Chevrolet will build.

Besides, there is nothing wrong with the performance of the present engine and many satisfied customers wouldn't like to change over to the new engine. Ford has separate lines of sixes and eights and there is no logical reason to scrap the engine entirely.

Automakers Call Taxes Unfair

The auto industry, as represented by the Automobile Manufacturers Assn., pushed hard for relief from Federal automotive excise taxes in the big Congressional tax battle.

A. E. Barit, president of Hudson and chairman of the association's taxation committee, listed basic reasons for the industry's opposition in a letter to the taxation committee.

The industry, which is feeling the effects of a sales slump, believes that the taxes are hurting sales to the point where they

threaten employment and production in the industry and among suppliers.

The industry also contends they are an "extreme example" of multiple taxation, are discriminatory in that they are not imposed on other forms of transportation, and are unfair to persons who depend mainly on automotive transportation.

Merger:

Nash-Hudson firm might add new divisions.

Before this appears, March 24 to be specific, the results of stockholders vote on the Nash-Hudson merger will be known. There is little doubt that the answer will be a rousing affirmative and the new American Motors Co. will be born.

This will leave Packard, Studebaker and Kaiser-Willys on the outside and Packard and K-W are frankly looking in.

But when a famous columnist reported recently that Studebaker and Packard were talking merger, a better informed Detroit

quipped: "He was 50 pct right. Packard is talking merger." In Chicago last week both Paul G. Hoffman, Studebaker chairman, and Harold S. Vance, president, made it clear that Studebaker intends to stay independent, barring unforeseen factors.

Cutbacks by Chrysler Again

Some cutbacks at Chrysler and downtime among the independents offset a generally encouraging sales picture as automakers look for spring sunshine to bring buyers out of what has been a winter of comparative hibernation.

Ward's Automotive Reports says its statistical evaluation of industry sales indicates a sharp upturn in sales in February and an even more encouraging trend so far in March.

The statistical agency reports February sales of 401,500 units, a 13 pct increase over January. So far in March, sales are approaching a rate of a 6 million unit year. It predicts that March may approach the total of a year ago when 520,575 units were delivered.

THE BULL OF THE WOODS

By J. R. Williams

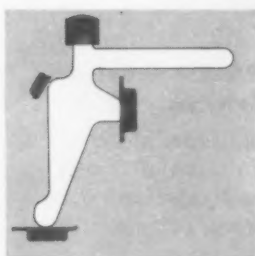




An Easy and Economical Way *to mill* *isolated flat surfaces*



Milled by the automatic profile control method—six pads on aluminum saddle brackets. Approximate production 28 per hour.



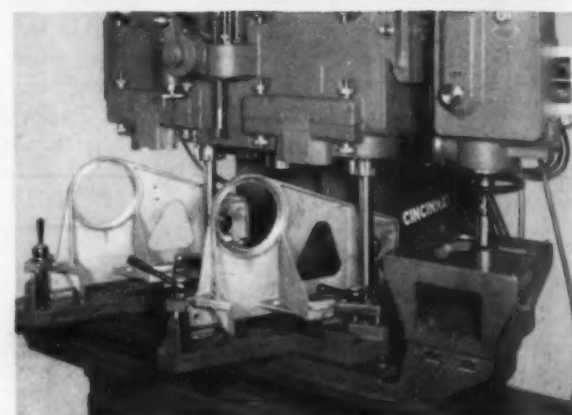
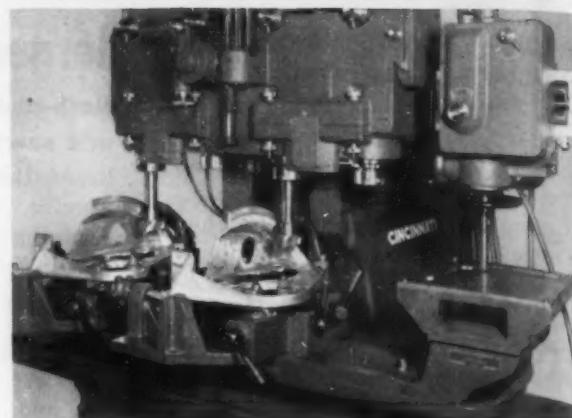
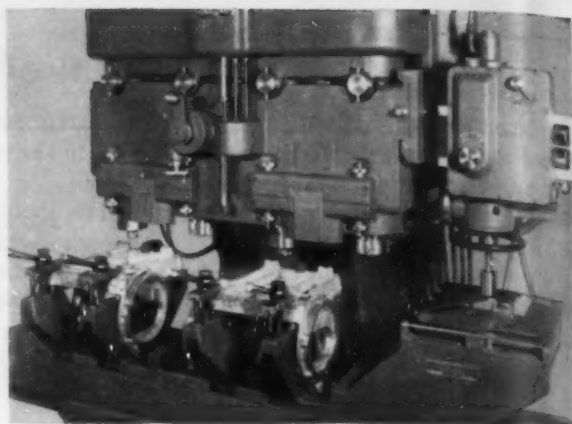
Milled by the automatic profile control method—four pads on aluminum saddle supports. Approximate production 22 per hour.



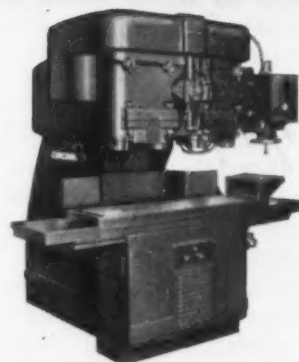
Milled by the automatic profile control method—four pads on these odd shaped aluminum parts. Approximate production 34 per hour.

Here's a new twist that may save you time and money in machining isolated bosses or pads. When a number of machined "islands" are in the same plane, mill them by the automatic profile method. In effect, you're not profile milling, but the automatic profile control unit guides the cutters over each pad in the shortest possible distance. Cincinnati Four Spindle 360° Automatic Profile Milling Machines offer you the most productive and lowest cost possibilities for work of this type. Three examples are illustrated here. The drawings indicate the path taken by the cutters, and the color spots represent the pads milled. Templates can readily be made from ordinary sheet metal. Brief data about these cost-reducing Automatic Profile Millers will be found in Sweet's Machine Tool Catalog. Complete data in catalog No. M-1215-3.

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO



CINCINNATI Four Spindle 360° Automatic Profiling Machine. Catalog No. M-1215-3 contains complete specifications.



CINCINNATI

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This Week in Washington

The Business Upturn May Be Starting

Administration economists see more activity in autos, appliances, construction . . . Retail sales gain . . . Navy wants more 25,000 ton tankers—By G. H. Baker.

The much predicted business upturn may be starting. The economy's slowdown of recent months has shifted into a gentle but discernible pickup in tempo in some areas.

Stepped-up rates of activity are now apparent to Administration economic experts in the following:

Spring buying has begun. Prices of used cars are being marked up from the give-away "lows" of February and early March. The logjams of dealer inventories in new cars are beginning to stir.

Seasonal pick-ups in sales are reported in some areas, although volume is still below that of the 1953 rate so far.

Construction . . . Sharp increases in the number and volume of contracts let in recent weeks. Public construction activity particularly heavy.

The beef that's being added to salesbooks not only adds needed cash to sellers' pockets, but also has the collateral effect of reducing inventories. This past winter's backlogs piled up at every level of trade—manufacturing, wholesale, and retail. Just prior to the end of winter, inventories nationally were valued at a total \$79,800,000,000.

Something over \$2 billion of this record hoard will be worked off during the next 3 months, if all goes well. And judging from all the signs at hand, there is every reason to believe that business activity in the second quarter is moving toward a chain reaction of increased orders, more employment, and greater volume of production.

Retail Sales Up . . . Small but

steady gains in automobile production are building up the pulse of industrial activity. The increased tempo of Detroit activity which began last month is partly responsible for confining the drop in total output of the nation's manufacturing plants to 7 pct.

Construction activity moves at unusually high levels, and retail

Issue Steel Product Lists

Two handbooks published recently by the government set forth in detail the acceptance standards to be used by federal agencies buying ferrous wrought items.

Running to 80 pages of tables and text is Federal Standard No. 48, "Tolerances for Steel and Iron Wrought Products." Approved by the Commissioner, Federal Supply Service, General Services Administration, its use is mandatory for government buyers.

This publication deals with 17 categories of products, ranging from hot rolled bars to tubular products and wire.

The second document is a Defense Dept. supply and logistics handbook, known as Standardization H 8, "Steel and Iron Wrought Products."

Developed by Pentagon logistics personnel with the aid of American Iron and Steel Institute, it discusses steelmaking, types of steel, and chemical compositions of products.

Copies of Standardization H 8 are priced at \$1.25 each by Government Printing Office, Washington, D. C. Federal Standard No. 48 is available from General Service Center, 7th & D Streets, S. W., Washington, at 50¢ per copy.

sales are up, reflecting mainly the larger volume of automobile sales. New federal employment statistics show that the number of jobless is now about 3.6 million. This total is a long way from the postwar high of 4.6 million reached in 1950. Lowest unemployment since World War II was the 1.7 million figure of last year.

May Build Tankers . . . Private shipyards will enjoy a spurt of new business if Navy plans for construction of large and speedy tankers win a congressional OK.

Navy wants authority to charter 20 modern, fast tankers. These would be built in private yards on the East and West Coasts and operated by private firms. Tankers would be of the 25,000-ton class, capable of holding a sustained speed of 18 knots.

Seek Help for Coal . . . Governors of 16 coal-producing states plan to try a fresh approach to the problems of the ailing coal industry. Gov. Fine, of Pennsylvania, who leads the new search for a remedy, has asked labor leaders, coal operators, and interested governors of other states to meet with him in Washington on April 26.

Gov. Fine calls attention to several possible solutions of the coal industry's ailments. These include: Increased state aid to the industry in coping with the problem of mine water, increased use of coal by state and local governments in public buildings, and greater encouragement of basic scientific research in state universities, looking toward new uses and new applications for coal.

Slowdown . . . Taxpayers counting on income tax refunds may find they're waiting a little longer this year to get their money.

Internal Revenue Service is using a no-hurry policy to give its employees more time to check returns. On this basis, IRS expects



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In 1950 American Welding completed the first successful production flash butt-welding of the new wonder metal — Titanium Alloy. Since that time hundreds of Titanium components have been produced in our plant.

If you use, or, are planning to use, fabricated Titanium components, let our Product Development Division study your problem. Our factory is equipped to perform welding, machining, and fabricating of all types of ferrous and non-ferrous metals.

Call or write us today!



THE AMERICAN WELDING & MANUFACTURING COMPANY

120 DIETZ ROAD
WARREN • OHIO

to complete the bulk of its refunding operations by May 15.

Indications are that there will be no appreciable difference between the number of refund claims this spring and the number last year.

Minerals:

U. S.-aided programs list \$54 million recoverable.

Divisions and agencies of the U. S. Interior Dept. have been stepping up their efforts on investigation of ore deposits and research into recovery of minerals and metals from low grade ores and deposits.

A check shows that during the fiscal year ending last June 30, Defense Minerals Exploration Administration was able to certify discoveries or development of deposits in connection with 40 projects to which the government contributed aid.

This brings to 52 the number of projects which have been certified since the start of the DMEA program. Recoverable ore from these projects is now estimated to be worth a minimum of \$54 million.

In addition, ore has been encountered on 78 other projects in which the government has a financial interest. Many of these 78, DMEA officials say cautiously, will eventually be certified. Data is still too incomplete to wager a guess as to number or the value of underlying ore.

Work Intensified

Evidence of continued high interest in the search for new ore reserves is seen by DMEA in the high number of applications during the 12 months to take part in the government-sponsored program. These added up to 503.

The U. S. Bureau of Mines also is stepping up its exploration program. Listed in its annual report are investigations of deposits of iron ore, manganese, molybdenum, tungsten, thorium, and, of course, uranium.

Bureau work also was intensified



CELEBRATING the seventy-fifth anniversary of the Geological Survey, President Eisenhower greets Dr. W. E. Wrather (middle), director of the Survey. With Dr. Wrather were (l to r): Assistant Secretary of the Interior Wormser and Secretary of Interior McKay.

on development of recovering beryllium ores from domestic deposits, of finding ways of increasing columbium and tantalum supplies, and resumed production of ductile titanium.

Surplus Materials:

Government won't dump excess surplus materials.

Government - bought strategic materials which are in excess of immediate production needs are to be disposed of without harm to American industry.

This is the promise of Office of Defense Mobilization, administrator of the materials stockpile program. In a new order, ODM pledges it will take care not to dump on the civilian market quantities of critical items on hand or to be bought later.

Policy of the agency now provides three possible alternatives for handling surplus materials bought under the Defense Production Act:

1. They may be added to the stockpile in excess of established goals, at the discretion of the President.
2. They may be set aside for stockpile procurement when needed.
3. If they don't go to the stockpile, they will be held for eventual

sale. They are to be sold only after approval by the President or designate.

ODM says the public is to have full knowledge of any planned disposals and that sales are to take place only after it is certain the market will not be seriously affected.

In general, the government contends that very few critical materials it has acquired can be considered surplus.

Develop Heat-Resistant Rubber

Many military uses are being forecast for a new synthetic rubber with a yard-long name, developed jointly by industry and the Army.

Basically a fluorocarbon elastomer, the synthetic may be used in tank linings, fuel hose, gaskets, seals, and coatings for protective clothing.

Quartermaster Corps describes the new product (monochlorotrifluoroethylene) as nonflammable and resistant to abrasion and heat. It withstands strong acids and is affected only slightly by hydrocarbon fuels, oxygen, ozone, and sunlight.

M. K. Kellogg Co., Jersey City, N. J., which developed the synthetic in cooperation with Quartermaster Corps, is putting up a pilot plant to produce several thousand lb monthly.



measuring up

...and **REX** is the standard
by which all high speed
steels are compared

An older brother sometimes makes a handy yardstick for measuring junior's growth. And when it comes to tool steels, REX® High Speed Steel is — and has been for over 50 years — the standard of comparison.

There's no mystery to REX High Speed Steel. Its quality has been time-tested in thousands of shops. And after all, it's performance — not claims — that really counts. Make your *own* comparison test. Put REX High Speed Steel to work. Compare its structure, finish, hardenability, carbide distribution and general uniformity. You won't find another high speed steel that surpasses REX.

Remember, too, that even though it is widely distributed and used, REX High Speed Steel is made *only* by Crucible. So for tops in high speed steel performance, be sure you order the Crucible REX brand.



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CRUCIBLE STEEL COMPANY OF AMERICA • TOOL STEEL SALES • SYRACUSE, N. Y.

West Coast Report

Expect Big Appliance Gain This Year

Major sales increase will be in clothes dryers, freezers, air conditioners . . . Slight drop in gas appliances . . . Eastern steel producers try to regain market—By T. M. Rohan.

"When we bought out the Wedgewood stove line, we thought it was the greatest thing ever," an official of the Rheem Mfg. Co., Richmond, Calif., said recently. "When we started going to national appliance manufacturers' meetings we found they never heard of it."

Despite this frustrating lack of national recognition, western heavy appliance manufacturers have built up a steady, optimistic industry.

Expect Sales Gain . . . In the 89,000-sq mile Northern California area of 5.6 million population served by Pacific Gas & Electric, sales of electric appliances for 1954 are expected to top 1953 by 1.5 pct. Biggest gain will be in clothes dryers at 20,000 compared to 15,073 in 1953, freezers which will hit 21,500, and compressor type air conditioners up 76 pct at 2470 units.

In gas appliances, a slight drop is expected, but total units will hit 166,330 units. Laundry dryers will rise 31.1 pct to 7250 units.

Volume Increases . . . One major appliance builder, who brought out his new models earlier this year than he did in '53, reports a major spurt in sales to dealers. Compared to January and February last year, dishwashers are up 20 pct; disposers, 10 pct; water heaters, 25 pct; dryers, 40 pct; washers, 10 pct; ranges, 100 pct, while refrigerators and freezer sales are equaling last year's pace.

The four Pacific Northwest states of Washington, Oregon, Idaho and Montana, thanks to low cost federal power, are second only to the TVA-aided Southeast as a market for electric ranges. In

sales per thousand meters in 1953, Oregon led the nation with 92, followed by California with 88 and Washington with 77, compared to New York at 61 and Illinois at 42.

West Buys a Lot . . . Of the total 1.3 million electric ranges sold in the U. S. in 1953 (for \$332.8 million), 15.8 pct went to the 11 western states, 11.4 pct within the 3 coast states alone. For washing machines, 8 western states, excluding Wyoming, Colorado and New Mexico, took 20 pct of units sold.

Freezer sales for the area amounted to 19.5 pct of U. S. total, clothes driers, 19 pct, electric blankets, 25 pct, dishwashers, 20 pct, new garbage disposers, 38 pct. Sales of disposal units amounted to 120,000 of a total 319,000 sold.

Sell for Less . . . On relatively simple items such as disposal units, hot water heaters and stoves, western manufacturers consistently undersell Midwest and Eastern producers. A newspaper survey of Sacramento last

year showed that of total ranges bought, 43.1 pct were of western manufacture.

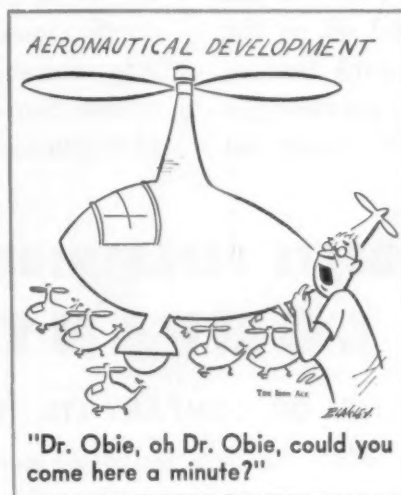
Top sellers were Wedgewood at 15.2 and O'Keefe & Merritt, 14 pct, Sears-Roebuck, 8.6 pct, Western Holly, 7.1 pct. Of all ranges purchased, 84.3 pct were gas and 15.7 pct electric, although, in the Pacific Northwest, the ratio is inverted.

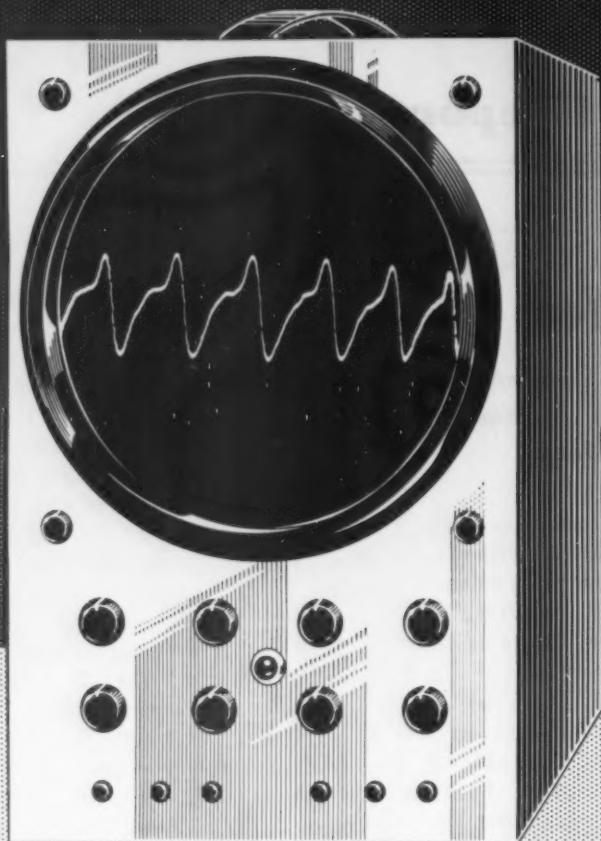
Gave Up . . . Westinghouse shortly after World War II began manufacturing water heaters at Emeryville, Calif. Project was abandoned after 2 years, because of high labor costs and a split market, which meant gearing to low output. But, according to Walter Baker, Westinghouse regional manager, much is expected of the firm's new \$50 million Columbus, Ohio, plant.

This plant will be Westinghouse's largest, will equal output of its Mansfield, Ohio, and Springfield, Mass., plants, and will double Westinghouse capacity.

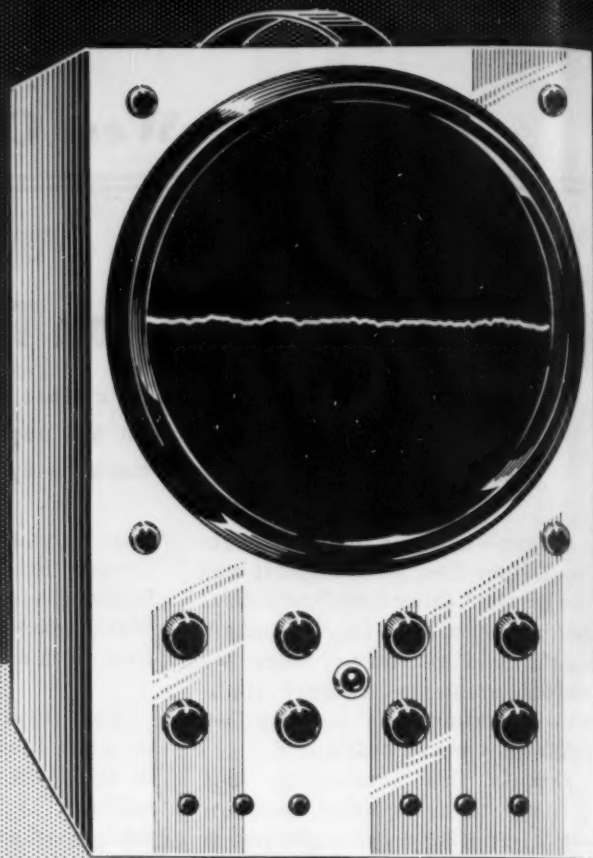
Use the Most . . . From the steel market standpoint, western appliance manufacturers represent the bulk of a 200,000-ton western market for cold-rolled sheets. Lone western manufacturer is U. S. Steel at Pittsburgh, Calif., although Kaiser makes CR sheet up to 16 in. width. Major supplier is Bethlehem's Sparrow's Point, Md., mill which ships by water.

Other eastern competitors are currently "beating their brains out to re-open long neglected western markets in CR sheet," Clarence Graham, manager of Rheem's Wedgewood stove division at Newark, Calif., said last week. "We are seeing steel salesmen now we haven't seen since before the war. Most of them will meet local delivered competition penny for penny and offer exceptionally good delivery. Many have not had offices here since before the war but are now making the rounds regularly."





WHEN A STRAIGHT MINERAL OIL was used to lubricate the ways, an 0.0008" jump at frequency of 2.74 cycles per second was noted.



WHEN SUNOCO WAY LUBRICANT was used on the ways, the jump was too small to measure, proof that this medium stops slip-stick motion.

TEST PROVES SUNOCO WAY LUBRICANT ENDS SLIP-STICK TABLE MOTION

How effectively Sunoco Way Lubricant stops slip-stick table motion is graphically illustrated by these oscillograms. The pattern on the left was made with a straight mineral oil as the lubricant; the other was made with Sunoco Way Lubricant on the ways. Both patterns are magnifications of changes in rate of table travel

and were obtained under identical conditions.

You can stop slip-stick table motion, protect the ways, get better surface finishes, cut production losses with Sunoco Way Lubricant. Try it in your shop. For more information, call your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. IA-3.

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Machine Tool High Spots

Tax Reforms May Boost Tool Sales

Administration's tax bill offers real promise . . . New formula gives fast tax writeoff . . . Senate's Democrats are final hurdle before it becomes law—By E. J. Egan.

Machine tool builders and distributors presumably heaved a collective sigh of relief last week when the Administration's much-debated omnibus tax bill got over its first Congressional hurdle. Once the Democratic proposal for higher personal tax exemptions was turned down, the entire tax package sailed through the House.

In this sweeping revision of U. S. tax laws are many reforms designed to encourage industrial growth and prosperity. Several of these are of particular interest to the machine tool industry. Of prime importance is the bill's more realistic approach to capital equipment depreciation for tax purposes.

Dividend Taxes Cut . . . Added encouragement for the industry is the proposed reduction in the double taxation of corporate dividends; lower rates on income from foreign investments and subsidiaries; permission to spread business losses over an 8-year period for the purpose of deducting them from income taxes.

But the big item is accelerated depreciation of capital equipment. The old system required cost writeoff at a fixed rate over a period of useful life generally estimated by the government at 15 or 20 years. Businessmen considered this a major handicap to peacetime industrial progress. They claimed that rapid technological advances in design and productivity often make machine tools obsolete in far less time.

Allows Fast Writeoff . . . Under terms of the new tax measure, new equipment bought after Jan. 1, 1954 could be depreciated as much as 20 pct the first year instead of

5 or 10 pct as under present regulations. And the new bill allows the same 20 pct rate to be applied to the un-depreciated balance in the second and succeeding years. This will permit more than 50 pct of depreciation writeoff in the first five years of machine tool use.

Write Own Tickets . . . Builders have long pressed for accelerated depreciation by an optional method, allowed in some countries. Under this plan the machine tool buyer would make up his own depreciation schedule, get it approved and recorded by the Internal Revenue Dept. and then stick to it. Using his own judgment of business conditions and estimated equipment life, the buyer could depreciate up to 50 pct of cost the first year if he wanted to.

But with government outgo currently running ahead of income, the tax-writing House Ways & Means Committee thought such a plan would cut near term tax revenue too sharply. The 20 pct de-

clining balance method is as far as they cared, or dared to go.

Generally speaking, machine tool builders are not too displeased with the 20 pct plan, consider it a step in the right direction. And there's always room to hope and work for further corrective legislation, now that the first big break in 19 years has been made.

Indicate More Orders . . . Is there any proof that liberalized depreciation allowances will increase orders for new machine tools? There are some indications it will. New orders to the industry hit a post-Korean bottom last November, but turned upward in December and gained still more in January. February reports from industry members aren't tabulated yet, but rumors are optimistic, and inquiries for quotations are plentiful.

Two months of new order gains aren't absolute proof that pending favorable tax legislation is solely responsible for the upturn. Many customers might have placed orders regardless of the Washington outlook, simply because they needed new machine tools. And the omnibus bill isn't a sure thing yet. A Democratic obstacle course has been installed in the Senate.

Some six weeks of hearings for the House approved bill are predicted in the Senate Finance Committee, and Democratic pressure will be stronger than ever to upset the applecart with higher personal exemptions. President Eisenhower refuses to say what he might do if a bill calling for these higher exemptions should reach his desk.

Tool Show Promising . . . "Biggest and best ever" feature preliminary announcements for the ASTE Industrial Exposition to be held in Philadelphia, April 26-30. Company-sponsored seminars and ASTE technical sessions will outline latest developments and trends in tooling.





A new metallurgical facility TO SERVE INDUSTRY

WW ALLOYS, INC.,* Division of Fansteel Metallurgical Corporation, proudly announces a substantial new expansion. A complete modern alloy foundry and forge shop is now in operation at Livonia (suburb of Detroit), Michigan.

These new facilities bring forth new products for new fields, including high quality aluminum bronze and copper castings for the machine tool, steel, aircraft and electrical industries. WW Alloys will of course continue to supply high conductivity copper base alloys for resistance welding, as it has for many years.

Please consider this new facility as a dependable source for your special non-ferrous alloy needs, in the form of castings (sand, permanent mold or centrifugal), forgings, finished or semi-finished parts.

*Formerly Weiger-Weed & Company

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REPORT TO MANAGEMENT..

Sore throat and taxes

With Wisconsin's junior senator hied off to the hinterlands on a speechmaking tour and made slightly less vocal by a sore throat, there was space in the newspapers last week for right-hand-column tax headlines.

The House last week rejected by a squeaky 210 to 204 vote a Democrat-sponsored drive to replace the proposed cut in taxes on stock-dividends with a provision for increasing personal income tax exemptions. This indicates effectiveness of Ike's attempt to topple Republican fence-sitters into his own backyard.

How much does Ike weigh?

But presidential prestige faces a sterner test in the Senate, where Democrats have a 48-47 voting edge, plus the usual support of Sen. Wayne Morse, Ind., Ore. Under leadership of Sen. George, D., Ga., they are pushing a \$200 personal income tax exemption.

Chances of the exemption's being passed by the Senate will be stronger if the business recession deepens. If Senate approves it, the whole omnibus tax bill would go back to the House for another vote.

Your own firm's different

Come Dec. 31, the current year is likely to show up as having been one of depression for some firms, a recession period for others, while many will find it was very near their best ever. Not the only factor, but an extremely important one in these variations is the effectiveness of individual company's sales forces.

People have money and will buy if they really want or need a product. Vast market that effective selling can tap is indicated in a recent survey which shows that last year:

- (1) 98 pct of U. S. families didn't buy a new food freezer, new home, or apartment.
- (2) 97 pct didn't buy a room air conditioner, an electric range, electric shaver.
- (3) 91 pct didn't get a new washing machine.
- (4) 87 pct weren't new car buyers.
- (5) 85 pct didn't purchase a new TV set; 71 pct weren't turning on a new radio.

You're how much a cog?

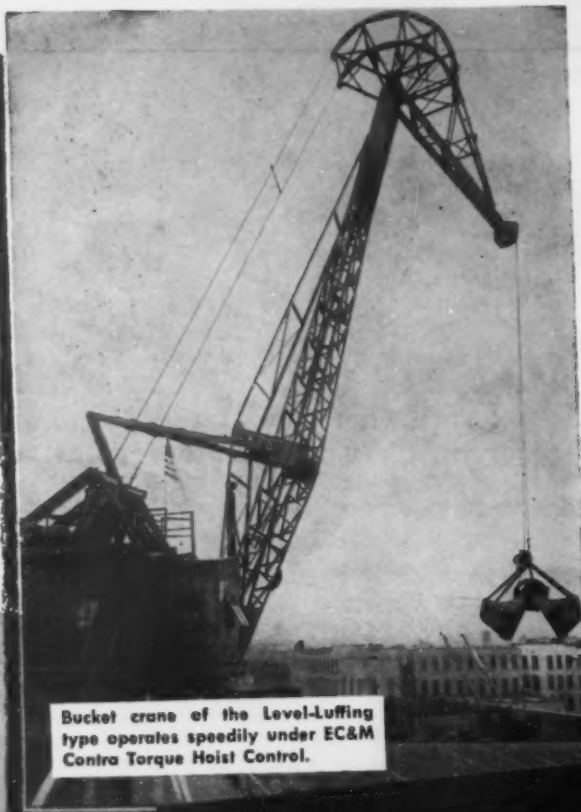
Chances are that if you're reading this column you're rated as a company executive. But are you a \$40,000 executive or a \$10,000 executive?

If you're in the \$40,000 category you know why you're there--but if you're a \$10,000 man you may be wondering why you're not farther up the line.

Main difference says M. I. Pickus, head of Personnel Institute Inc., is that the \$40,000 executive knows how to accept responsibility without anxiety, can make sound judgments under pressure without panic; knows how to get things done with the help of others.

There are, of course, many exceptions to these tenets.

March 25, 1954



Bucket crane of the Level-Luffing type operates speedily under EC&M Contra Torque Hoist Control.



Bucket cranes in this fertilizer plant operate at high output with EC&M Contra Torque Hoist Control.

CONTRA TORQUE

How EC&M FREQUENCY RELAY CONTROL improves A-C BUCKET CRANES

FAST GETAWAY—Quickly responsive to the frequency of the induced-rotor voltage, EC&M Frequency Relays match torque requirements to the load . . . get the motor up to speed quickly for lowering the bucket—to move the trolley in or out . . . cut down the time between trips.

WIDE SPEED SELECTION—These Relays permit starting-down on any master switch point—no waiting until last point is reached. And a better speed choice gives greater flexibility in clean-up operations, and speeds up output.

SMOOTH STOPPING—When checking motor lowering speed, weak torques are provided for light loads or the empty bucket; stronger torques for heavier loads. Trolley motor is stopped and reversed smoothly under Frequency Relay automatic operation.

SPEED-LIMITING Safety on all Speeds. These relays (one set for hoisting and lowering) automatically shift motor connections to safeguard lowering operation with greater skill than human hands could do it.

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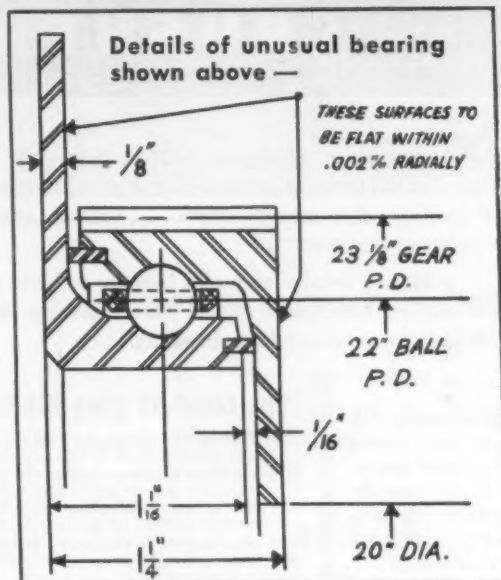
Kaydon Radial Ball Bearing
20.125" x 25.125" x 1.250"



EXTRAORDINARY, THIN-SECTION BEARINGS... AN EVERYDAY ASSIGNMENT FOR KAYDON ENGINEERS

This special, thin-section bearing is typical of the outstanding job KAYDON does to solve tough bearing design problems. Bearings of this particular type are currently being adapted by KAYDON for a host of aircraft, radar equipment, and guided missile applications. Check the sketch at the right. Note the unusual $\frac{1}{8}$ " flanges and the fact that the gear teeth extend through only 130° . Then, too, this bearing features integral seals which are built into the bearing.

When you're faced with a difficult problem involving special bearing design, take advantage of KAYDON's specialized experience in developing and mass-producing thin-section and special high-precision bearings. Write, wire or phone. A KAYDON expert will be pleased to cooperate, help you get the job done faster, better and probably at less cost.



THE KAYDON ENGINEERING CORP.

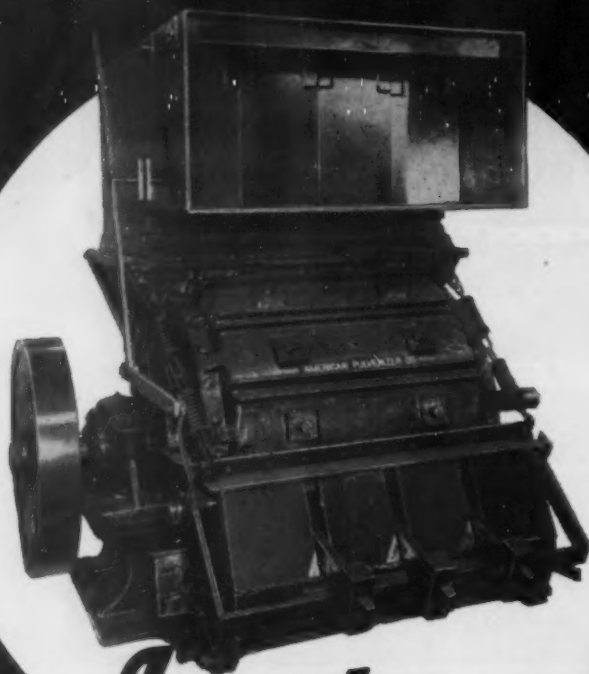
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PRECISION BALL AND ROLLER BEARINGS

KAYDON Types of Standard and Special Bearings:
Spherical Roller • Taper Roller • Ball Radial • Ball Thrust
• Roller Radial • Roller Thrust • Bi-Angular Bearings

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Change Metal Turnings Waste
into More Profitable Shoveling CHIPS



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METAL TURNINGS

CRUSHERS

No progressive, profit-conscious company—who produces 10 or more tons of metal turnings per month—can afford to ignore the profit potential of a modern chip salvage system . . . with an American Metal Turnings Crusher at the core.

American installation profits include: \$4 more per ton for chips than for machine turnings; up to 50 gallons per ton in cutting oil recovery; 75% less storage; easier, faster handling.

How many profit dollars are you losing under present operations? If, for example, you're currently producing 20 tons of turnings a month . . .

THIS COULD BE YOUR PROFIT STORY FOR NEXT YEAR!

240 Tons Metal Turnings per Year.....	\$ 960.00
(20 tons/month at \$4 extra per ton)	
6,000 Gallons Recovered Cutting Oil at 30¢/Gal.....	\$1,800.00
(50 gals. per ton x 240 tons = 12,000 gals. Half of this, 6,000 gals., can be credited to use of chips instead of turnings in reclamation)	
Estimated Savings in Manpower, Storage, Tools, Maintenance, Freight, etc.....	\$ 300.00
TOTAL GROSS PROFIT	\$3,060.00

American
PULVERIZER COMPANY



WRITE for Metal Turnings Crusher Bulletin.

Designers and Manufacturers of Ray Crushers and Pulverizers

1439 MACKLIND AVE. • ST. LOUIS 10, MO.

Free Publications

Continued

Plate fabrication

Services, facilities, material range, scope of fabrication and industries served are described in brochure now available from company. *Gusset Boiler & Welding, Inc.*

For free copy circle No. 17 on postcard, p. 105.

Cams, crankshafts

Meehanite Cams, Camshafts and Crankshafts devotes itself exclusively to application problems solved by Meehanite cams, camshafts and crankshafts. It describes briefly the basic metallurgy and chief important engineering properties of a few of the types of Meehanite metal most widely used for such service. *Meehanite Metal Corp.*

For free copy circle No. 18 on postcard, p. 105.

Turret mills

New catalog fully illustrates and describes Rogers Perfect 36 Vertical Turret Mills. Illustrations show the various operations such as boring, drilling, turning and threading that are performed on this Rogers Mill, as well as complete specifications. *Rogers Machine Works, Inc.*

For free copy circle No. 19 on postcard, p. 105.

Paint additive

Penetrol is a clear oil-based product and not a substitute for paint. It is a single product which has three principal uses: it stops rust action on steel without removing the rust; it is a reinforcing additive for practically all maintenance type paints; it is a vehicle for aluminum paste or powder. *Flood Co.*

For free copy circle No. 20 on postcard, p. 105.

Portable scales

Full height and bench height models of the 2000 series of portable scales are illustrated in 4-p. folder. Platform area is shown to be 18 pct larger than that of previous models, but over-all dimensions of scale have been reduced. *Toledo Scale Co.*

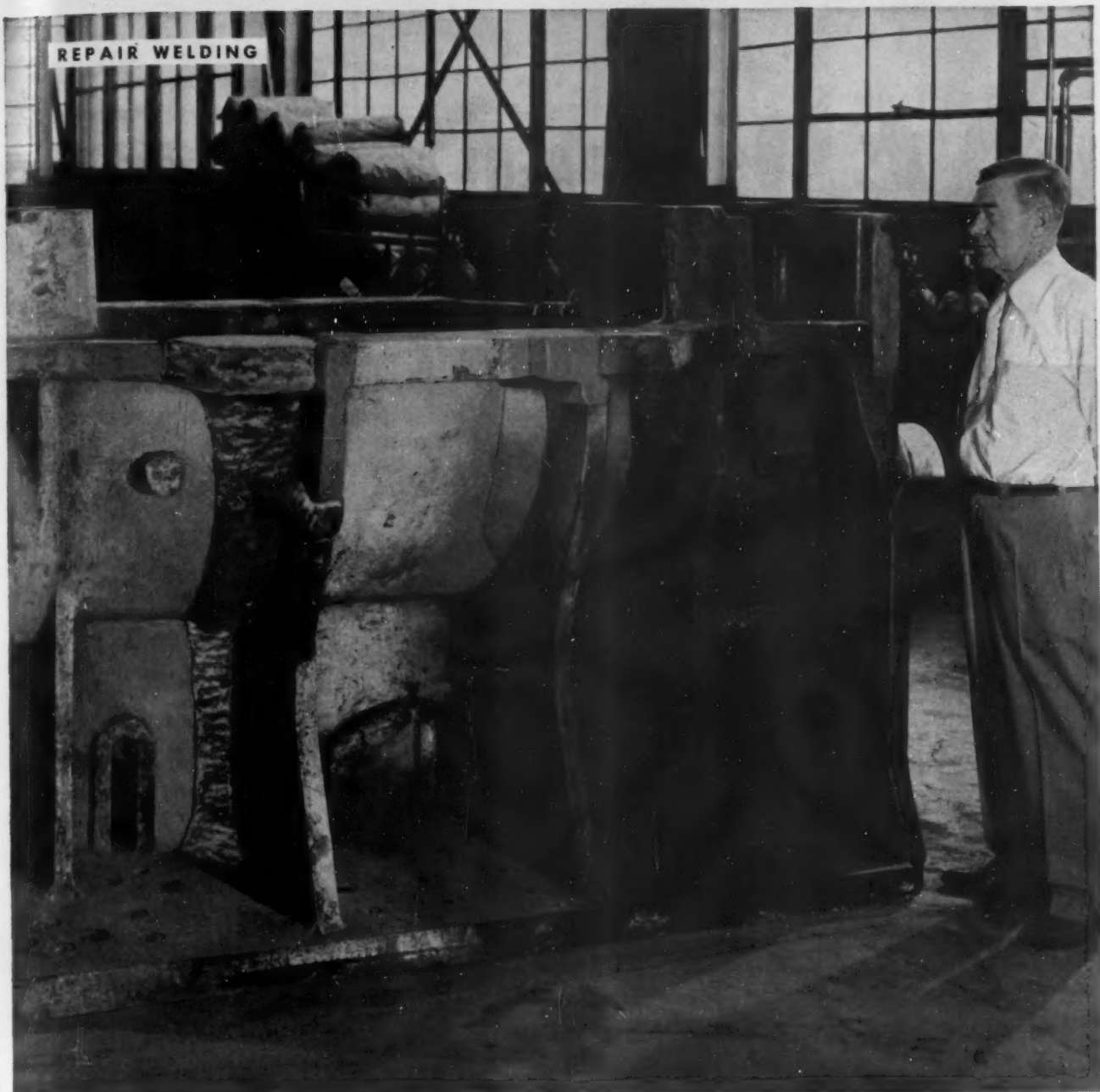
For free copy circle No. 21 on postcard, p. 105.

Forging & casting

Smooth hammered forgings, composite die sections and cast-to-shape tool steels are described in new booklet. Handbook outlines forged shapes available, stainless as well as tool steel, and weight limits, as well as analyses. *Allegheny Ludlum Steel Corp.*

For free copy circle No. 22 on postcard, p. 105.

REPAIR WELDING



"Don't scrap it . . . braze-weld it" paid off handsomely when this inner ram was twice repaired.

Braze welds twice save press part from scrap heap

This is the inner ram of a 500-ton press for shaping automobile fenders, quarter panels, floors, etc. It weighs 10 tons.

Twice it cracked, in different places. And twice braze-welding repaired it. It would have cost thousands of dollars to replace this part.

Punch Press Repair Corp., 1975 Hilton Road, Ferndale 20, Michigan, did both jobs. Each time they used Tobin Bronze*-481 Welding Rods. They say, "Welding with Tobin Bronze saves us time. It's economical and dependable, too. Braze

welds need less preheating . . . high stresses don't build up. Tobin Bronze flows freely, 'tins' quickly, gives strong, sound bonds."

Tobin Bronze-481 Welding Rod is widely used for repair welding of cylinders and other locomotive parts . . . automobile engine blocks . . . cast-iron pipe . . . machinery parts and other equipment.

ANACONDA Welding Rods for many types of repair and production jobs are available from distributors throughout the United States. The American Brass Company, Water-

bury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

*Reg. U. S. Pat. Off.

54137

ANACONDA®
welding rods

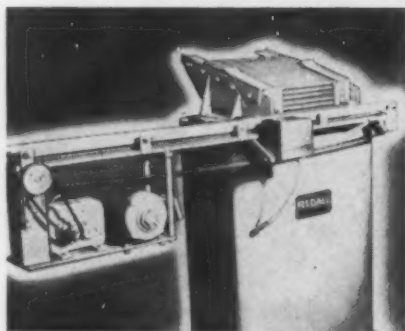
Anaconda Copper-372 • Tobin Bronze-481 • Anaconda-997 (Low Fuming) Bronze • Nickel Silver-828 • Cupro Nickel-826 • Everdur-1010 • Ambraloy-928 • Phosphor Bronze-351 • Phosphor Bronze-354

March 25, 1954

109

NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies . . . just fill in and mail the postcard on page 105 or 106

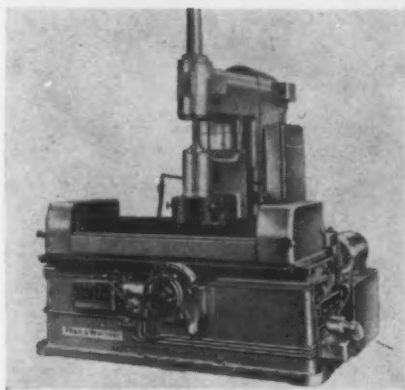


Magazine loader for long cylindrical work

This unit automatically feeds long cylindrical work to centerless grinders, special polishing or inspection machines. Magazine is loaded with parts which are automatically delivered to built-in conveyor. Parts are cycled by means of a photoelectric relay mounted on conveyor attached to front of machine. Feeding rate is con-

trolled by means of a variable speed drive on conveyors. Entire unit is self-contained and mounted on a fabricated steel base housing electric and air controls. Handles range of work from $\frac{5}{8}$ to $1\frac{1}{2}$ in. diam and 10 to 24 in. long. Models for other sizes are available. *Feed-all Machine & Engineering Co.*

For more data circle No. 23 on postcard, p. 105.



Rigid design, high table speeds featured in grinder

New and greatly improved 14-in. hydraulic vertical surface grinder has more rigid design throughout and higher table speeds. It is available in 14 x 36-in. or 14 x 60-in. size with solid ring wheel or 17 x 36-in. or 17 x 60-in. size with segmental wheel. Increased length and depth of the heavily ribbed bed give greater support to the table and column. Wider wheel head ways together with increase

in the column bearing length provide the spindle head with additional support. Higher table speeds infinitely variable and uniform from 2 to 100 fpm permit use of harder, longer lasting wheels, lowering wheel costs. This range provides a grinding speed for almost any material adding substantially to the model's versatility. *Pratt & Whitney.*

For more data circle No. 24 on postcard, p. 105.



Motorized film reader offers three magnifications

In a new motor-driven microfilm reader, magnifications of 23, 30 and 40 times are available by simply interchanging the lenses. At these magnifications, 16mm film images produced by standard, duo or duplex microfilming methods can be viewed at high legibility and eye comfort. All film loading and operating controls are located on the front of the reader within easy reach. A single

knob controls both direction and rate of film travel across the reader screen. Scanning speed of the film, in either direction, can be adjusted from slow to high speed for rapid advancing and rewinding. Continuous film movement is possible at any selected scanning speed, desirable either for locating a specific image or for inspection. *Recordak Corp.*

For more data circle No. 25 on postcard, p. 105.



Driving set speeds Rollpin insertion

For faster insertion of Rollpin fasteners, a new tool driving set has been developed. Held in the hammer by a beehive-type retainer the driving head has a slot machined along one edge. For starting, the operator holds the rollpin in this slot without getting his fingers between the tool and the work. Af-

ter the pin is started, driving may be shifted to a hole drilled in the face of the driving set. The driving set may be used with Ingersoll-Rand's standard pneumatic aircraft riveting hammers AVC-10, 11, 12 and 13. *Elastic Stop Nut Corp.*

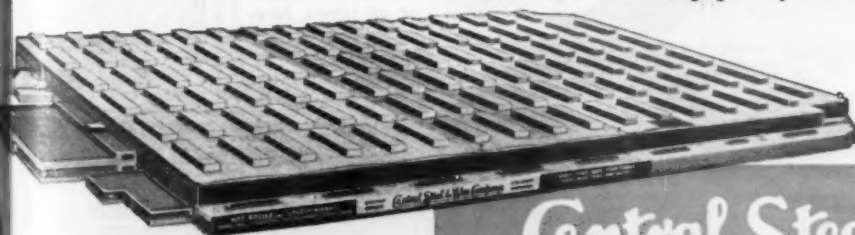
For more data circle No. 26 on postcard, p. 105.

Turn Page



BARS

HOT ROLLED • COLD FINISHED
carbon and alloy, stainless steel
brass and copper, aluminum



*many analyses in a
 wide range of sizes, cut
 to your multiple lengths*

Central Steel & Wire Company

PLANTS and OFFICES

CHICAGO 88, ILL.
 P. O. Box 3316-A
 Republic 7-3080

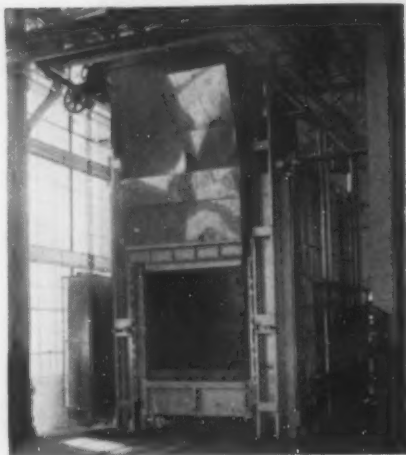
DETROIT 12, MICH.
 13400 Mt. Elliott Ave.
 TWinbrook 2-3280

CINCINNATI 14, OHIO
 Box 148 Annex Sta.
 AVenue 2230

MILWAUKEE 1, WIS.
 Box 1134
 EVergreen 4-7400

New Equipment

Continued

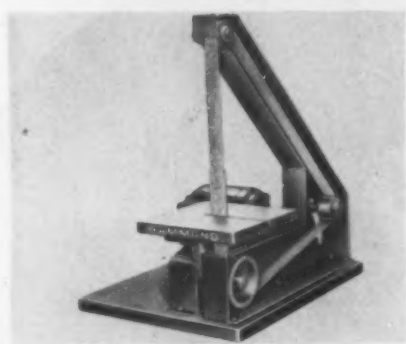


Two furnaces in one offer wide temperature range

This recent Rockwell installation was designed for a wide range of heat treating temperatures—for operation from 1275°F to a maximum of 2200°F. The furnace incorporates heating and recirculating features for annealing and stress relieving castings and other miscellaneous ferrous pieces, with a maximum work load of 50,000 lb. For this, hot air recirculation is provided for 1275°F to 1600°F to help maintain uniform heating quality throughout the

charge. For higher temperature heating, the recirculating fan is not used and the ducts to and from the fan are closed by the dampers. The furnace is a single end, crown arch type, fired above the work and below the hearth of the car on which the work rests. Indicating and recording controllers with a motor driven program unit are provided to control the burners on a program type heating process. *W. S. Rockwell Co.*

For more data circle No. 27 on postcard, p. 105.



Deep throat permits finishing hard-to-get-at areas

New 1-in. flexible abrasive belt grinder-polisher solves many troublesome problems in the grinding, polishing, deburring and chamfering of regular and irregular shaped parts. Deep throat opening of 10½ in. permits the finishing of large, irregular shapes and those hard-to-get-at areas. Freedom of movement means faster finishing and

better results. Work table and belt platen permits accurate grinding of flat surfaces. Table can be tilted for grinding angular surfaces. Free belt above the belt platen conforms to the shape of surfaces. Irregular contours can be ground by removing platen, work table. *Hammond Machinery Builders.*

For more data circle No. 28 on postcard, p. 105.



Never too hot, never too heavy,

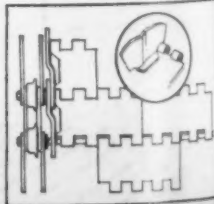
MAY-FRAN

Here's a conveyor belt built to take it . . . to last as long as the machinery it serves! Once installed, it's in to stay. MAY-FRAN engineers poured abrasive carborundum dust continuously on operating belt for a prolonged period of time . . . and it came through this grueling test still intact and serviceable!

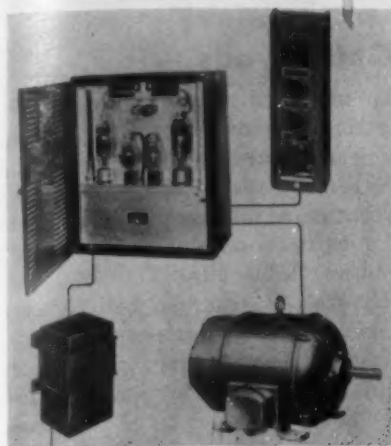
You may not want to transport carborundum dust — but if you have foundry castings . . . die castings . . . hot forged

1748-MF

Outside links incorporate interlocking wings . . . remain positively engaged at all times. New interlocking flanges permit staggering of links . . . eliminate lateral movement.



MAY-FRAN

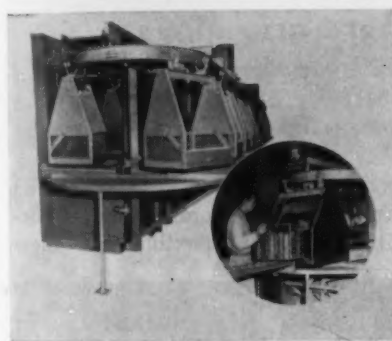


Adjustable-speed drive permits precision control

The Electronic Select-A-Spede, a new stepless adjustable-speed drive, is designed for operation from ac power lines and is available with dc drive motors in standard NEMA frame sizes, $\frac{1}{4}$ to 15 hp. Advantages claimed for the Select-A-Spede, are precision speed control; unusually wide speed range where required; adaptability to a variety of optional electrical and mechanical modifications; and the use of new, simple reliable electronic cir-

cuits. Speed ranges are 5:1, 20:1, or 50:1, with 100:1 available for some applications. Optional control features include inching, jogging, threading speeds, controlled acceleration and deceleration, dynamic braking and reversing. Complete unit consists of an anode transformer, electronic control panel, pushbutton station, and specially designed adjustable speed dc drive motor. *Louis Allis Co.*

For more data circle No. 29 on postcard, p. 105.



Automation adapted to batch cleaning-processing

Aja Lif Automatic consists of a series of independent, self-contained dipping units serviced by an automatic conveyor system. Dipping, raising, and transfer of the parts from one stage to the following stages is not only fully automatic but the work to be processed is vigorously agitated up and down in each solution according to a prede-

termined exposure time program. The entire operation is fully automatic. The whole unit is serviced by only one operator. A timing device makes it possible to vary the processing cycle according to technical requirements. *Magnus Chemical Co., Inc.*

For more data circle No. 30 on postcard, p. 105.

Turn Page

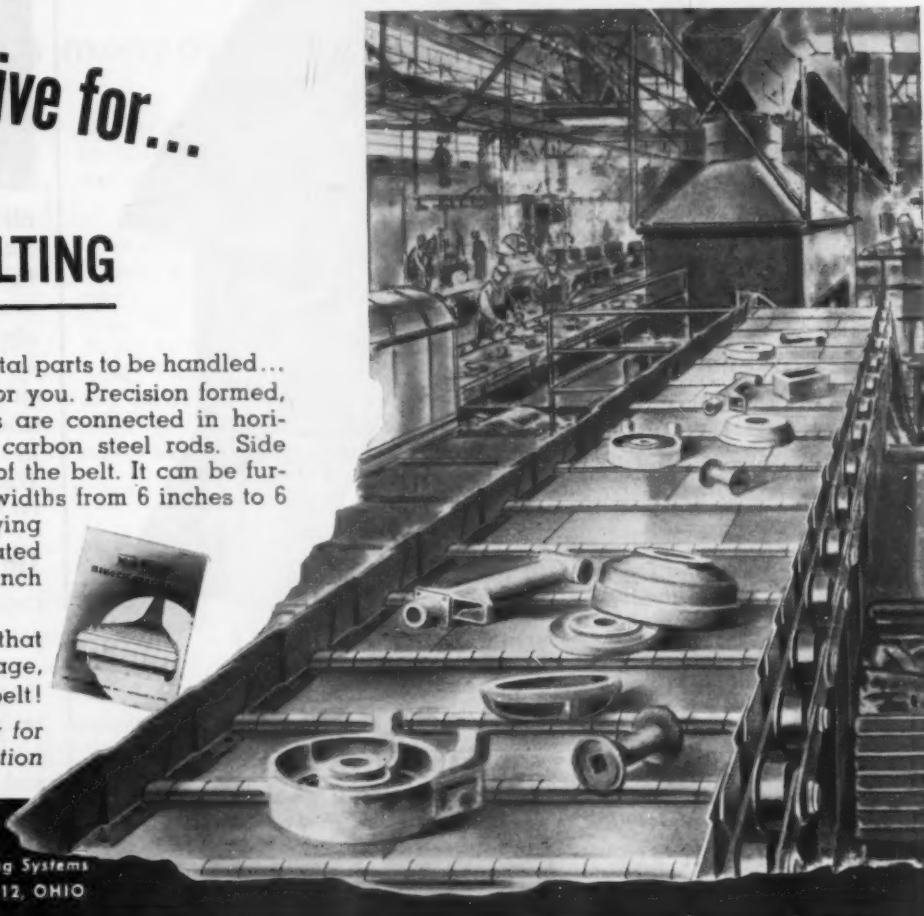
heavy, never too abrasive for...

MAY-FRAN HINGED-STEEL BELTING

items... hot, heavy or abrasive metal parts to be handled... MAY-FRAN hinged-steel belt is for you. Precision formed, heavy-gauge hinged-steel links are connected in horizontal rows by means of high-carbon steel rods. Side chains become an integral part of the belt. It can be furnished to your specifications in widths from 6 inches to 6 feet and in any length or carrying capacity. Both solid and perforated links are available in $2\frac{1}{2}$ to 12-inch pitch lengths.

If you want conveyor belting that can withstand the roughest usage, specify MAY-FRAN hinged-steel belt!

Write today for complete information



ENGINEERING, INC.

Designers and Builders of Complete Handling Systems
1698 CLARKSTONE ROAD • CLEVELAND 12, OHIO



... plain or
fabricated
steel

We carry large stocks of beams, channels, and angles (in standard and special sizes) and plates, sheets and cold-finished bars.

Or, a complete job in steel can be fabricated to your "specs" through our modern engineering and plant facilities.

Why not put Levinson service to the test?

LEVCO

CORPORATION

NATIONAL DISTRIBUTORS FOR THE LEVINSON STEEL COMPANY

37 So. 20th St., Pittsburgh 3, Pa.

Central Ohio Warehouse—387 So. Market St., Galion, O.

— New Equipment —

Continued

Cutting oils

An improved series of Sunicut W cutting oils contains Sun's all-petroleum, polar compound—Petrofac. Petrofac gives cutting oils metal-wetting and oiliness properties similar to those obtained with animal and vegetable oils. The improved Petrofac is odorless and lighter color, resulting in a series of Sunicut W oils that are easy to see through, have better operator acceptance, and give highly satisfactory performance. *Sun Oil Co.*

For more data circle No. 31 on postcard, p. 105.

Sure grip gloves

Safe handling of oily sheets of sharp-edged metal is claimed for gloves featuring a plastic coating over a cloth akin to turkish toweling. The new gloves, known as Armorkote, are comfortable as possible; they are flexible and allow



for circulation of air to keep hands cool. The somewhat uneven surface allows a firmer grip than a smooth-surfaced glove and the gloves do not soak up oil. They are resistant to abrasion and to cuts by sharp-edged materials. They give low cost hand protection in terms of long glove life. *C. Walker Jones Co.*

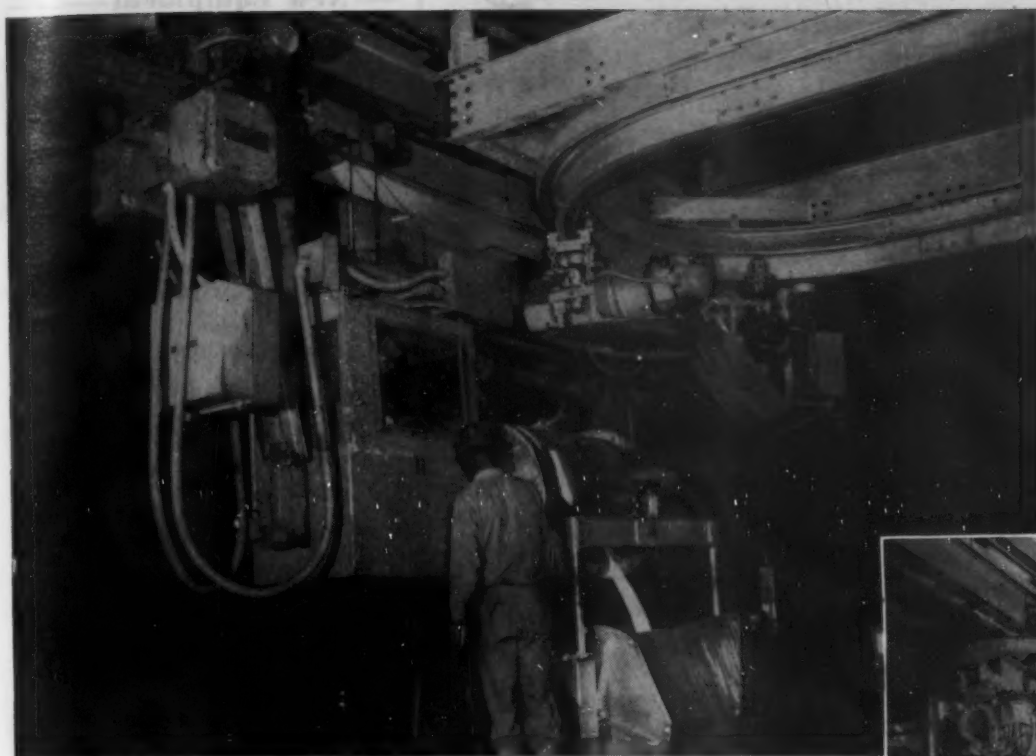
For more data circle No. 32 on postcard, p. 105.

Improved acid hose

Condor acid discharge and Condor acid suction hose has been improved by compounding a new special synthetic with other acid-resisting materials for tube and cover. The hose will withstand many organic and inorganic acids, salts, and alkalies, and plating solutions much longer than conventional acid hose. *Raybestos-Manhattan, Inc.*

For more data circle No. 33 on postcard, p. 105.

Turn Page



Transferring from hot metal carrier to pouring ladle.

SHEPARD NILES helps

Ford solve manpower problems

● Twelve Shepard Niles Hot Metal Carriers serve ten cupolas at the new Ford foundry in Cleveland.

Molten metal is always delivered at exactly the proper spot because the cab of the Shepard Niles Hot Metal Carrier is at the exact level of the metal, thus affording the operator perfect vision. The many cupolas in connection with the pouring platforms are so arranged with switches and curves that the Shepard Niles Hot Metal

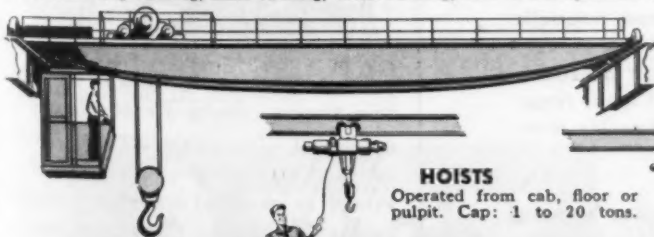
Carrier's travel—from the cupolas to the pouring floor—is cut to a minimum.

Shepard Niles Close Clearance Hoists serve as auxiliary equipment, receiving the molten metal from the Carrier and delivering it direct to the molds on the pouring floor. Hence, one man with Shepard Niles Through-The-Air Equipment on each loop moves more metal safely, swiftly, economically.

Loads through the air since 1903.

CRANES

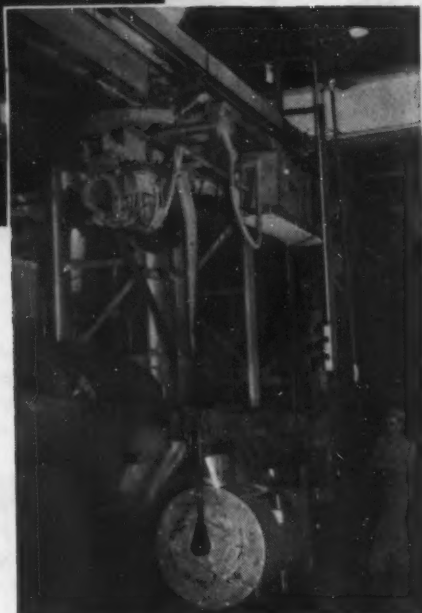
Overhead: Top running, inner running, under running, floor or cab operated. Cap: 1 to 450 tons.



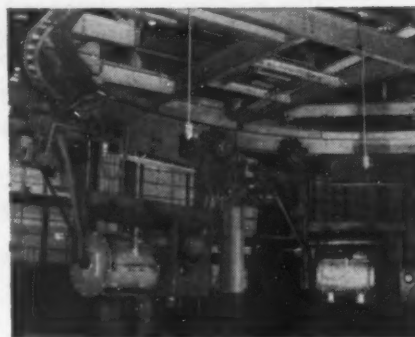
HOISTS

Operated from cab, floor or pulpit. Cap: 1 to 20 tons.

MAIL
COUPON ▶



Operator leaves cab and fills transfer ladle at cupola.



Hot metal carriers delivering metal from cupolas to separate pouring lines.

SHEPARD NILES Crane & Hoist Corp.
1449 Schuyler Ave., Montour Falls, N.Y.
() Please send me your latest Hoist Bulletin
() Please have a representative call.

NAME _____ TITLE _____
COMPANY _____
STREET _____
CITY _____ STATE _____

SHEPARD NILES
CRANE AND HOIST CORPORATION

March 25, 1954

How DE-STA-CO makes specialties S.O.P.



*** STANDARD
OPERATING
PROCEDURE**

Forty years' experience in the stamping business has taught us the value of giving our customers certain processing procedures which are ordinarily considered "extras". This policy of considering your needs first is largely responsible for our consistently rapid growth.



Close tolerance coining is one of the production methods that DeStaCo offers, not as a specialty, but as a Standard Operating Procedure. Our knuckle-action presses accommodate up to 400-ton capacity . . . frequently save you the additional expense of a grinding or machining operation.



Our precision parts department turns out critical stampings such as refrigerator intake and discharge valve reeds. These parts are made of heat-treated and ground imported DeStaCo valve steels. Our own Iso-Finish method provides a sealed-edge, strain-relieved surface for long life.



High-volume production of small, intricately-formed parts is done by Multi-Stamping. This is an entirely automatic method of processing complete parts in a single 4-slide machine. Progressive dies used in this operation are made in our own tool and die department.



Our production facilities include a number of high-speed, automatic presses to process your parts at the lowest possible unit cost. Our plant is best-suited to quantity production runs of light to medium-heavy fabrication up to $\frac{3}{8}$ " material thickness. Our bed areas range from 10" x 12" to 48" x 72", pressures from 5 to 250 tons. We draw up to 4" deep.

Other DeStaCo specialties are Toggle Clamps for jigs and fixtures, Precision Washers, Arbor Spacers and Shims, Shim and Feeler Stock.

REPRESENTATIVES IN PRINCIPAL AREAS

Write us for our Stamping brochure



DETROIT STAMPING COMPANY

345 MIDLAND AVENUE • DETROIT 3, MICHIGAN

— New Equipment —

Continued

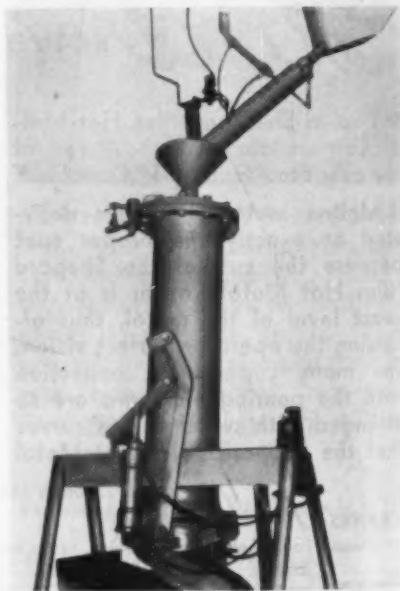
Hard facing electrode

Wear-Arc Super WH electrodes are a new development in the welding and hard facing of manganese steel. They are said to provide superior strength and wear properties. Core wire used contains approximately 33 pct alloy, balanced in proportions new in a hard facing electrode. Having a carbon content of only 0.35 pct, the Super WH electrode is said to produce an equivalent hardness of alloy steels containing three times this carbon content. Low carbon content prevents spalling and flaking of the weld deposit under operating conditions requiring severe impact. Alloy Rods Co.

For more data circle No. 34 on postcard, p. 105.

Pressure filter

Dewatering granular materials is possible with a new type pressure filter. Material is fed into the machine in slurry form; and is discharged at less than 10 pct moisture content by weight. Operation is



fully automatic, by means of electric timers. Shop air at 85 psi is employed for dewatering, with average air consumption of 15 cfm. Power is required only for solenoid valves and timer. Capacities range up to 5 tons per hr of 100-lb cu ft material. Hydro-Blast Corp.

For more data circle No. 35 on postcard, p. 105.

Turn Page

Your nut running costs can be reduced with APEX hand-driver-and-socket combinations

On production line or in maintenance work, Apex hand-driver-and-socket combinations will help reduce the cost of manual nut running operations. A single Apex hand driver will accommodate a full range of Apex impact quality sockets to drive hex head nuts. Sockets are quickly and easily interchanged to meet job requirements instantly . . . less time and effort is needed . . . your small tools inventory can be kept to a minimum.

Apex hand driver, Superloid handle, 1/4" male square drive, pin lock. Available with ball lock.



Apex hand driver, wood handle, 1/4" male square drive, pin lock. Available with ball lock.

FOR RUNNING HEX NUTS

For spinning, fastening or removing hex head nuts, bolts, pal nuts, etc., any of these Apex sockets may be used in cost-cutting combination with an Apex hand driver. Sockets are of impact quality, cold broached and heat-treated for extended service.



Tapered—for 3/16" to 5/32" hex nuts.
Straight—for 3/16" to 1/2" hex nuts.



Extra Long Length Sockets
Tapered—for 1/4" to 5/32" hex nuts.
Straight—for 3/16" to 1/8" hex nuts.

TO DRIVE SHEET METAL SCREWS

These impact quality Apex sockets are case-hardened for use on sheet metal screws, hardened and commercial cap screws. 1/4" female square drives, for use with Apex hand drivers illustrated.



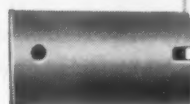
Tapered—for 3/16" to 5/32" hex head screws.
Straight—for 1/4" to 3/16" hex head screws.

You can reduce screw driving costs, too! with APEX hand-driver-and-bit combinations

For economy and efficiency on manual screwdriving operations, choose an Apex hand-driver-and-bit combination. Driver accommodates service drive bit holder which takes a full range of Apex insert bits to drive Phillips, Frearson (Reed & Prince), Slotted, Clutch Head and Socket Head Screws. Bits are easily interchanged in the holder, may be economically discarded when worn. Hand drivers and holders last indefinitely, reducing original equipment costs.

Catalog 21

56 pages of time- and- money-saving Apex tools for every screwdriving job. Write, on your company letter-head, please, for your copy.



Service drive bit holder, 1/4" fem. sq. drive for 1/4" hex shank bits. Available for 1/4" square shank bits.



PHILLIPS



FREARSON
(REED & PRINCE)



SLOTTED



CLUTCH HEAD



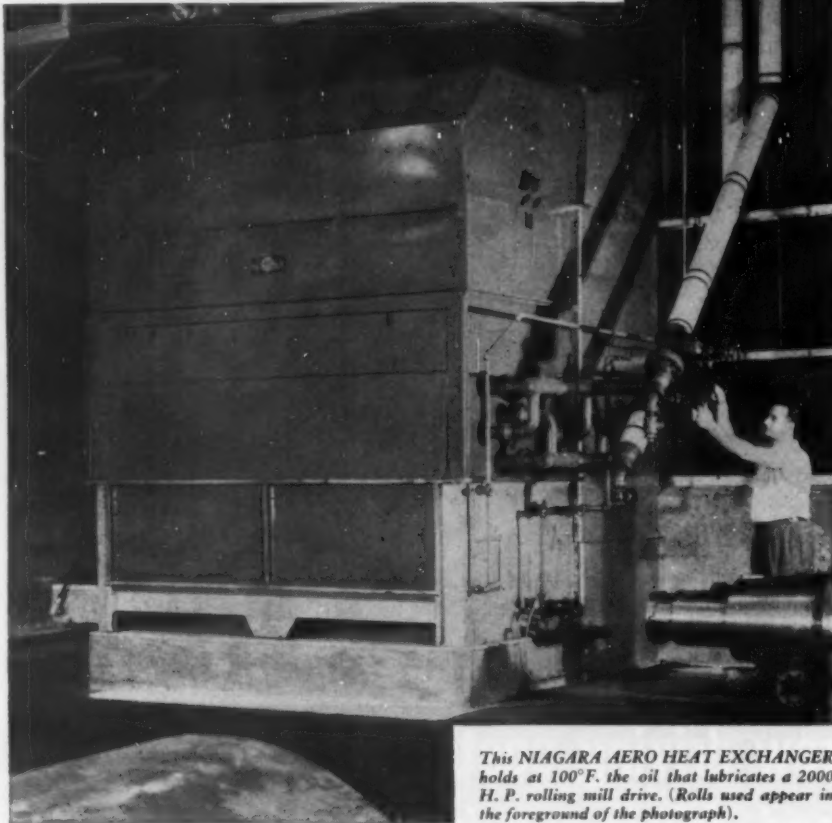
SOCKET HEAD

APEX TOOLS

hand drivers, impact sockets, insert bits

THE APEX MACHINE & TOOL COMPANY
1029 S. Patterson Blvd., Dayton 2, Ohio

YOU CAN KEEP ACCURATE CONTROL OF LUBE OIL TEMPERATURE



This NIAGARA AERO HEAT EXCHANGER holds at 100°F. the oil that lubricates a 2000 H. P. rolling mill drive. (Rolls used appear in the foreground of the photograph).

The Niagara Aero Heat Exchanger uses atmospheric air to cool liquids and gases by evaporative cooling, removing the heat at the rate of input, controlling temperatures precisely. You save 95% of the cost of cooling water. You get great saving in piping, pumping and power, quickly getting back the cost of the installation.

You can cool and hold accurately the temperature of all fluids, air and gases, water, oils, solutions, chemicals for processes and coolants for mechanical and electrical equipment. You can cool welding machines, hydraulic and extrusion presses, plastic molds, furnaces, controlled atmospheres, quench baths, obtaining better results with precise temperature. You obtain closed system cooling, free from dirt or scale.

For further information, write for Bulletin No. 120

NIAGARA BLOWER COMPANY

Dept. IA, 405 Lexington Ave.

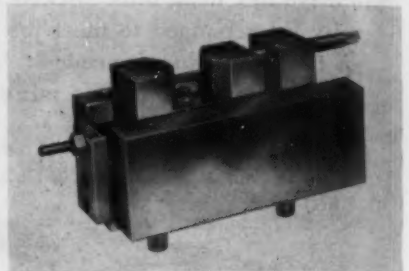
New York 17, N. Y.

Niagara District Engineers in Principal Cities of United States and Canada

New Equipment Continued

Pinch-type holder

New sliding pinch-type unit is designed for holding thin walled parts in their as-is position on chucks or face plates. The units are mounted in the T slots of a face plate or chuck, in the quantities and combinations required. Special floating

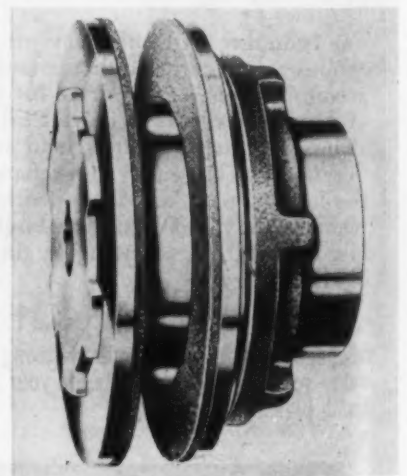


arrangement permits quick self-alignment to conform to the shape of the workpiece. Pinching capacity is 1½ in. thickness; diameter capacity limited only by size of chuck or face plate it is used upon. *E. Horton & Son Co.*

For more data circle No. 36 on postcard, p. 105.

Overload protection

Compact, adjustable torque-limiting overload protection devices are available for a wide variety of machine drives. Called Morse Torque Limiters, these slip-type friction clutch devices feature a powdered



metal bushing on which such drive components as chain sprockets, V-belt pulleys or gears can be mounted. Eleven standard models give maximum torque capacities from 20 to 620 ft.-lb. *Morse Chain Co.*

For more data circle No. 37 on postcard, p. 105.

MUELLER BRASS CO.

600 SERIES BEARING ALLOYS

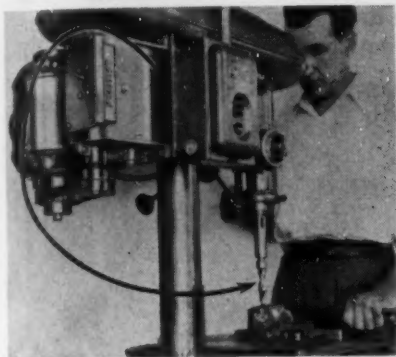
FORGINGS • ROD • SCREW MACHINE PRODUCTS

proving their quality throughout

American industry

Without gears

A four-speed transmission of 1 hp capacity utilizes Gilmer timing belts and pulleys instead of conventional gears. Light in weight, it requires no lubrication and can be used in a vertical, angular, or horizontal position, with the input



shaft up or down. The four-speed changes are instantly available through a shift-lever-handle. The unit can be used as a reducer or a step-up drive. It is suitable for operating on small drill presses, lathes, milling machines, etc. *Western Mfg. Co.*

For more data circle No. 38 on postcard, p. 105.

Cable conveyor

New design of the Bush-Lock cable conveyor is said to increase cable life more than 30 times; facilitates lubrication to protect against acid, moisture, and other deteriorating factors; and permits fast, easy maintenance and revision of cable conveyor installations.



Shorter radius horizontal and vertical curves conserve valuable floor space by permitting a more compact layout. Both $\frac{1}{4}$ and $\frac{3}{8}$ in. Bush-Lock cable conveyors will operate on existing Snub-Lock design systems. They can transport parts through cleaning, painting, and drying as well as through progressive assembly operations. *E. W. Buschman Co.*

For more data circle No. 39 on postcard, p. 105.

Turn Page

six members
of "600" series
... one for every purpose

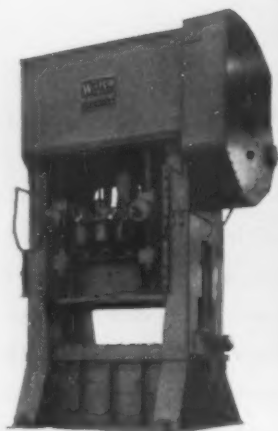
There are six members in the "600" series group, and they possess fundamentally similar characteristics. But slight differences in the properties of each are produced through variations in the basic formula. Thus, each metal is best suited to perform a specific set of functions. And as a group, they are suitable for a wide range of applications.

Mueller Brass Co. "600" series bearing bronzes are lightweight, high strength copper-zinc base alloys with excellent bearing and mechanical properties, non-galling and non-seizing characteristics and good resistance to corrosion. They have a dense, homogeneous structure that reduces machining time and metal waste and increases tool life. As bearings, gears, connecting rods, cams and other parts, they will generally save you considerable money and outperform and outlast the cast phosphor bronzes. Write today for complete information about the MUELLER BRASS CO. "600" series alloys for forgings, rod or screw machine products.

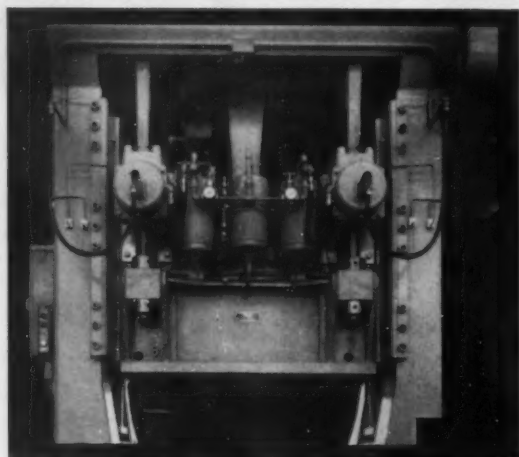
MUELLER BRASS CO. PORT HURON 24, MICHIGAN

NEW Warco®

HYDRO-PNEUMATIC DEVICE ELIMINATES DOUBLE-ACTION BLANKHOLDING PROBLEMS



Front view of Warco Press
with device installed.



Double-Action Press Operators—Here's a simple and compact hydro-pneumatic force adjustment device that acts as safety overload protection for the blankholder and provides a means for adjusting the blankholder pressure independently at all four corners.

This new unit makes it possible to determine the blankholder pressure required at each corner, and to duplicate this setting whenever the job is re-run, without having to repeat the tedious setting required with the rigid blankholder. It also provides a positive safety overload protection in case of double blanks, as the device will detect the double blank and stop the press before damage to the press and dies occur.

This Warco Hydro-Pneumatic Blankholder, of size and capacity required, can be incorporated as an extra feature in Warco Double-Action Presses. For further information, estimates, etc., contact Warco Press Division, Federal Machine and Welder Co., Warren, Ohio.



Rear view of Warco Press with
device installed.

THE FEDERAL MACHINE AND WELDER COMPANY

WARREN, OHIO



—New Equipment— Continued

Stainless tubing

New high strength, thin wall stainless steel tubing has been developed for industrial uses where corrosion resistance, light weight and special shapes or bends may be required. Flexonics makes both standard and high strength stainless steel straight wall tubing. The latter gains greater yield and tensile strength for the same wall

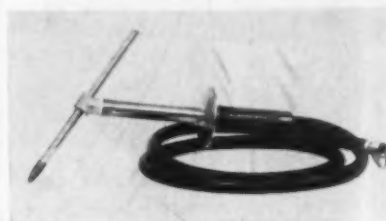


thicknesses through a work-hardening process. This makes the tubing more crush-resistant, due to higher temper of the metal. No diecasting, brazing or burn-down welding is employed in manufacture of the thin wall, lightweight configurations illustrated. Each is made from a single piece of material. *Flexonics Corp.*

For more data circle No. 40 on postcard, p. 105.

Heavy duty torch

Simplicity and ease of operation are the outstanding qualities of this new Model J-5 torch, which cuts and gouges all metals using only electric arc and compressed air. An automatic air valve is ac-



tuated by inserting the electrode. Fixed electrode angle plus automatic controls permit the operator to reverse direction without the necessity of adjusting the electrode or his grip on the handle. Two heads, one for $\frac{3}{8}$ in. and one for $\frac{1}{2}$ in. electrodes, are supplied with each torch. *Arcair Co.*

For more data circle No. 41 on postcard, p. 105.

The **Iron Age**

SALUTES

Ernest F. Swigert

Vigorous application of modern methods by this active Oregonian made his products world famous.



WHEN most industrialists reach 58 they think of recreation in terms of golf, yachting or maybe stamp collecting. But it took a broken leg to make Ernest F. Swigert, president of Hyster Co., Portland, Ore., consider giving up skiing. He hasn't.

With that kind of typical Big Tree country enthusiasm, Ernie Swigert has brought Hyster to a position of leadership in the field of special tractor equipment and lumber-handling trucks. Under him the company has applied lessons learned in handling huge Oregon timbers to the design of mechanized industrial trucks of which Hyster makes over 100 models, including the spectacular lumber carrier which can straddle an automobile.

Since Ernie took over leadership of Hyster from his father, the late C. F. Swigert, a pioneer Oregon industrialist, and the founder of Hyster, the company has added three plants to its original Portland works. The new facilities are in Danville and Peoria, Ill., and Nijmegen, the Netherlands.

Although a divisional vice-president of National Assn. of Manufacturers, and an official of three other nationally known corporations, Ernie is not so desk-bound that he can't pitch in with his engineers to get the wrinkles out of any tough problems that come along.

Before graduating from Harvard in 1915 with a B.S. in metallurgy, Ernie found time for plenty of football. During the first World War he served with the U. S. Air Force. In addition to skiing, Ernie plays tennis and squash, does some sailing and drives a fast speedboat up and down the coast.

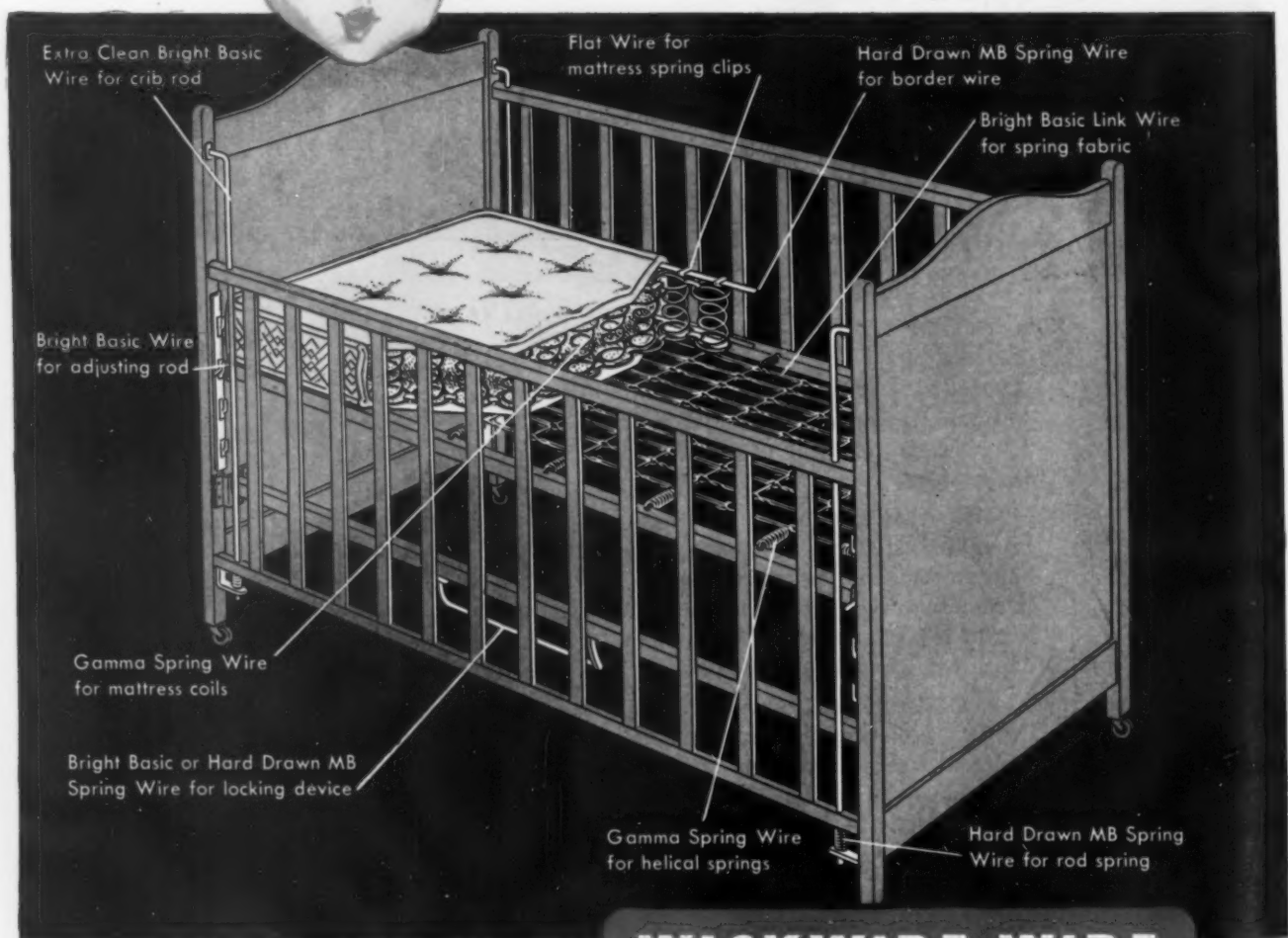


They're our babies

Here—in a baby's crib—we find just one more example of the wide diversity of Wickwire production . . . proof of Wickwire's ability to provide you with a single, dependable source of supply for every type of wire you may need in the manufacture of your particular product.

No less than nine different kinds of wire go into the making of a typical baby's crib. And every one of them is a product of Wickwire—the result of painstaking fabrication and quality control that's complete and uninterrupted from ore to finished wire.

Yes, whatever your specifications may be—high or low carbon, in all tempers, finishes and grades—
For The Wire You Require; Check First With Wickwire.



WICKWIRE WIRE



PRODUCT OF WICKWIRE, SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Denver • Oakland
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia

1900

The Iron Age

INTRODUCES

Russell C. Stone, appointed director of Industrial Relations and Personnel, LACLEDE-CHRISTY CO., St. Louis, Mo.

Alexander Blakely, appointed vice-president in charge of manufacturing, METAL REMOVAL CO., Chicago.

John Hamilton Crankshaw, promoted to vice-president in charge of engineering, J. A. ZURN MFG. CO. and its affiliates.

Robert K. Story, elected vice-president and general manager, Connecticut Div., ZURBACH STEEL CORP., Southington, Conn.

Marvin W. Brandau, promoted to director of market development, AEROQUIP CORP., Jackson, Michigan.

Victor Frederiksen, appointed chief industrial engineer, Dodge Div., CHRYSLER CORP., Detroit.

Charles J. Ryan, promoted to assistant manager of the Merchant Products Dept., U. S. STEEL CORP., American Steel & Wire Div., Chicago; and Harrison D. Worthington, becomes assistant manager, Wire Rope & Construction Material Products Dept.

Harlan W. Cobb, named abrasive engineer, Cleveland, NORTON CO.

A. T. Forrest, appointed chief engineer, Park Works & Spring Works, CRUCIBLE STEEL CO. OF AMERICA, Pittsburgh.

Elton W. Turner, appointed sales engineer, THE HYDRAULIC PRESS MFG. CO., Mt. Gilead, Ohio.

Lee C. Sassmanhausen, named works manager, MULLINS MFG. CORP., Liberty Plant, Warren, O.; Earl L. Scott, named assistant works manager; and Ralph Knepper, becomes head of production planning department.

William T. Thomas, becomes assistant chief engineer, AJAX ELECTROTHERMIC CORP., Trenton, N. J.; and James R. Coley, made secretary and sales manager.

William S. Tuttle, appointed superintendent, Troy, N. Y., coke plant, REPUBLIC STEEL CORP., Cleveland.

Norman H. Callner, appointed chief project engineer, THE LIQUID CARBONIC CORP., Chicago.

Charles A. Schneider, appointed acting manager, Baltimore Branch NATIONAL LEAD CO., New York, succeeding Henry A. Getz, who became manager, Metal Div., Cleveland branch.

A. H. McChesney, appointed chief inspector, all Studebaker Manufacturing operations, STUDEBAKER, South Bend, Ind.

Hugh D. Luke, becomes manager of manufacturing of rotating equipment, RELIANCE ELECTRIC & ENGINEERING CO., Cleveland.

John W. Thompson, named sales development manager, THE CARPENTER STEEL CO., Reading, Pa.

Phil Hewett, becomes manager of special machine tool sales, Special Machine Tool Div., CINCINNATI MILLING & GRINDING MACHINES, INC.



HERBERT BARCHOFF, appointed president, Eastern Brass & Copper Co., New York.



JOSEPH M. SCHAEFFER, elected president, The Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.



R. CLYDE WOLFGONG, promoted to vice-president in charge of sales, Electro Refractories & Abrasives Corp.

Personnel

Edward H. Farmer, named manager, Pacific Coast Manufacturing Plant, E. W. BLISS CO., Los Angeles.

Robert M. McCluer, appointed manager, CAINE STEEL CO. OF PENNSYLVANIA.

R. C. Ulmer, appointed head, Research Dept., COMBUSTION ENGINEERING, INC., New York.

Dr. Edward A. Kern, appointed manager-Engineering, Silicone Products Dept., GENERAL ELECTRIC CO., Waterford, N. Y.

Vernon E. Stahnke, becomes sales-manager, Chicago area, Delta Power Tool Div., ROCKWELL MFG. CO., Pittsburgh.

David Byrd, appointed sales manager, Richmond Div., GAR WOOD INDUSTRIES, INC., Richmond, Cal.

Russell W. Bill, appointed sales manager, Shakeproof Div., ILLINOIS TOOL WORKS, Chicago.

George L. Duke, named manager of purchases, Aviation Gas Turbine Div., WESTINGHOUSE ELECTRIC CORP., S. Phila., Pa.

Seaver C. Kenyon, appointed assistant sales manager, THE WEST STEEL CASTING CO.; and Herbert J. Swanson, joins the Sales Dept.

George E. O'Brien, named factory manager, new water meter plant, Uniontown, Pa., ROCKWELL MFG. CO.

Harry S. Clark, appointed general manager, Longview, Tex., plant, R. G. LETOURNEAU, INC.

Donald E. Thal, appointed central general manager, Pacific Div., San Francisco plant, LINK-BELT CO., Chicago.

Joseph S. Pelles, appointed sales manager, Transportation Industries, LEWIS-SHEPARD CO., Watertown, Mass.



JAMES K. WATKINS, appointed chief engineer, Midland, Pa. Works, Crucible Steel Co. of America, Pittsburgh.



GEORGE A. KUHN, appointed manager of sales, Brainard Steel Div. of Sharon Steel Corp., Warren, Ohio.

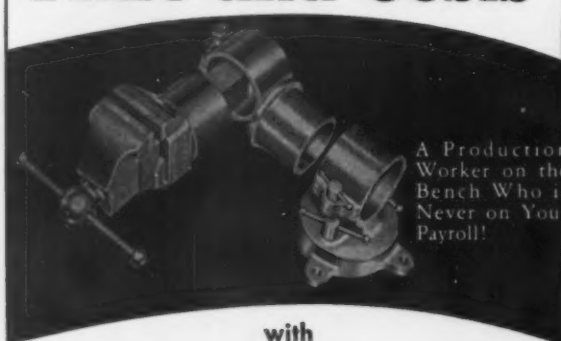


OMAR V. GREENE, appointed general sales manager, The Carpenter Steel Co.



R. F. ALLEN, appointed assistant to the executive vice-president, H. K. Porter Co., Ind.

Cut Production Time and Costs



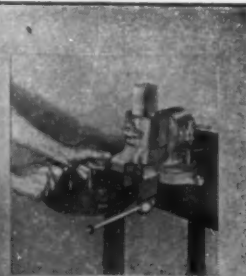
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At temperatures over 500°F. most lubricants fail. When this happens, 'dag' Colloidal Graphite will solve the problem.

'dag' dispersions of colloidal graphite form microscopically thin, *dry lubricating films* which fight friction beyond the burning-points of most oils. These dry films of 'dag' Colloidal Graphite are unaffected by heat up to 750°F. . . under some conditions up to 3000°F.

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Dispersions of molybdenum disulfide We are also equipped to do custom dispersions available in various carriers. ing of solids in a wide variety of vehicles.



Acheson Colloids Company, Port Huron, Mich.

... also **ACHESON COLLOIDS LIMITED**, LONDON, ENGLAND



try 'dag' resin-bonded dry films for permanent lubrication

HELD IN QUARANTINE

**... and not released
until proved fit!**

That's the fate of all PERKINS precision, custom-made GEARS prior to shipment. The folks in our inspection department — a section of which is shown — may be a suspicious lot (never mind what some other people in our plant call them), but when they certify a gear to be sound and "as specified" you can bet your last bottom dollar that the end-product of which they ultimately become an integral part, will be a better product!

NOTE 1: A new product is the Perkins Precision Spring Coiler. This coiler (patent applied for) turns out precision springs — any type, shape, size, from wire sizes .005 to .125.

2: Another new product — the Perkins "Bendit 15" — a patented metal forming machine bends and shapes sheets, rods; strips tubing into innumerable complex as well as simple forms that would be difficult or impossible to make by other means. Eliminates need for expensive tools or specialized skills. Ht. 47", net wt. 200 lbs. Write today for descriptive catalogs, prices etc.



PERKINS MAKES:

Helical Gears
Bevel Gears
Sprockets
Ratchets
Worm Gears
Spiral Gears
Spur Gears with
shaved or ground teeth
Ground Thread Worms

PERKINS MACHINE & GEAR COMPANY

WEST SPRINGFIELD, MASSACHUSETTS

Personnel

Continued

L. G. Currie, appointed district sales manager, MARION POWER SHOVEL CO., Marion, Ohio.

George S. Bond, named advertising manager, P. R. MALLORY & CO., INC.

Joseph R. Roberts, appointed advertising manager, AEROQUIP CORP., Jackson, Mich.

Harry B. Budd, appointed sales manager, Eastern Div., THE FLXIBLE CO., Loudonville, Ohio.

Albert A. Hally, appointed general sales manager, CAMPBELL CHAIN CO., York, Pa.

Sheldon F. Woodard, appointed master mechanic, Automotive Body Div., CHRYSLER CORP., Detroit.

Roger W. King, appointed a manufacturers' representative, in Upper New York State, and Eastern Canada, HORTON CHUCK, division of The E. Horton & Son Co., Windsor Locks, Conn.

James H. Kunkle, appointed superintendent, REPUBLIC STEEL CORP., Warren District Coke Plant.

William T. Martin, transferred to Waynesboro, Pa. office, LANDIS TOOL CO.

Herbert Boshea, appointed purchasing agent, Bridgeport Thermostat Div., ROBERTSHAW-FULTON CONTROLS CO.

OBITUARIES

Frederick U. Conard, 63, president, Niles-Bement-Pond Co., at his home in West Hartford, recently.

Waldo F. Congdon, 71, founder of Tool Sales Co. and M-B Products Co., of Detroit, recently, in New Bedford, Mass.

Albert Goldman, vice-president and general manager, Atlantic Manufacturing Co., Philadelphia.

John F. Berger, 63, representative, Newark Wire Cloth Co., Newark, recently.

Zinc and phosphate—



LEAF-LIKE arrangement of mill-treated sheet shows the zinc and phosphate coatings which give paint better adherence and appearance.



By N. E. Hays

Product Engineer
Armco Steel Corp.
Middletown, Ohio

Mill Coated Sheets Improve Product Quality

- ◆ Sheets pretreated for painting give products longer life and greater attractiveness . . . Big question: Is it more economical for the fabricator to use mill-phosphatized sheets, or to install phosphate treating equipment? . . . Important factors are capital expenditure and floor requirements . . . Phosphatizing requires a minimum of three stages of equipment . . . Four more are needed for adequate cleaning and rinsing.
- ◆ Mill-treated sheet and strip are obtainable in an entire range of widths and gages . . . Weights of coatings are varied to meet requirements . . . Material or parts in storage need no grease or oil for extra protection . . . Steel mill research and control assures proper cleaning, uniform coating and better bonding . . . As a result, painting surfaces look better, wear longer, and the base metal has improved protection.

Coated Sheets: Here's What Mills Can Supply

◆ **STIFFER COMPETITION** has caused consumers to become more selective in purchasing metal products, particularly farm equipment and household appliances. This has led manufacturers to re-examine the finish on their products from the standpoints of longer life and sustained attractiveness. In high-quality products, pretreatment of the metal base before painting is established practice. The big question is whether it is more economical to use mill-phosphatized sheets or to install phosphate treating equipment.

Operators faced with the necessity of supplying a Bonderite-treated product may consider using mill-treated sheet or strip. These are made by Armco Steel Corp., Middletown, Ohio and several other steel producers in almost the entire range of widths and gages. Each producer varies gage, width of steel and the weight or type of zinc coating to suit a particular market, but all supply a phosphate-coated product.

Variation in the phosphate coating among producers is relatively little but should be investigated by the manufacturer to determine which supplier furnishes the most appropriate material for a particular product. All producers provide zinc coatings to protect the sheet or

strip from red rust during shipment, storage and fabrication.

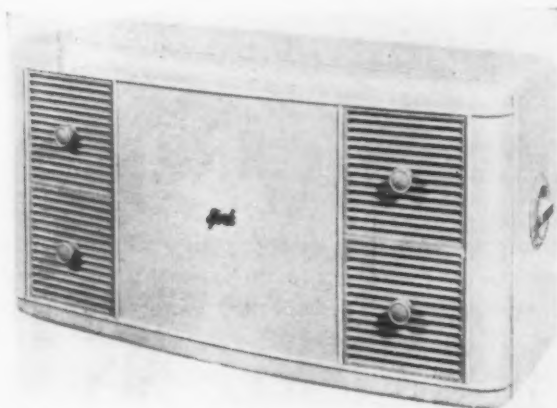
Electroplated zinc coatings vary from 0.025 to 0.25 oz per sq ft. Hot-dip coatings vary from as little as 0.75 to more than 2.0 oz per sq ft. Thus, the manufacturer has a choice of substrates which will protect against red rust from a few months to more than 20 years.

Phosphate coatings range from about 0.005 to 0.030 oz per sq ft. Variations in coating weights arise primarily from market requirements of the individual mill. This in turn dictates the use of different types of plant equipment and solutions to produce varying types of phosphate coatings. The top limit is established to permit the customer to accomplish spot welding. All coatings in current productions are crystalline.

Electroplated zinc coatings are applied to forestall red rusting before processing and painting. Producers of phosphating solutions recommend that the phosphate coating on bare steel be painted within a few hours after processing. However, zinc-coated and phosphated material can sometimes be left bare for several months before undesirable corrosion products develop that would interfere with painting.

Advantages of Using Mill Stock

With proper planning, the zinc coating can be used to many advantages by the fabricator. Parts can be fabricated and stored without the additional protection of oils or greases. Parts made in a central stamping plant can be shipped to outlying assembly plants without applying rust-resisting oil or grease. It also eliminates subsequent cleaning.



ZINC AND PHOSPHATE coatings protect this air-conditioner from condensate and serve to anchor the chlorinated rubber primer. As a result, finish lasts longer, is more attractive.

Lighter electroplated deposits can serve for a mist coat of primer or enamel formerly applied to surfaces concealed after assembly. Plating stops bleeding of rust from these hidden surfaces through seams or spot-welded joints.

Heavier zinc coatings make painting essentially decorative in many cases. When extra-smooth sheet is supplied, the surface is as dense and smooth as cold-rolled steel, and permits one-coat finishing. Red rust is retarded on a product made of this material because of its greater cut, abrasion and shock resistance.

The galvanic nature of zinc requires that a relatively large area be exposed before red rust appears. It is estimated that an automobile body of zinc-coated Bonderite-treated steel, finished with a one-coat enamel, would last at least 10 years. Calcium chloride used on streets and roads may soon make this better protection mandatory.

Many products might be reduced in weight if design engineers could be assured that corrosion would not affect strength requirements. This is especially important in transportation equipment where unnecessary weight makes for higher operating costs.

Truck body manufacturers recognize this

and specify hot-dip zinc-coated sheets for roofs and electroplated sheets for sides. By purchasing phosphated-treated sheets and using proper cleaning methods, only one-coat painting is required. If paint is damaged, the zinc coating provides protection from malignant red rusting until the affected area can be conveniently repainted.

School buses are another important field for this type of construction. They often operate under conditions that contribute to severe corrosion. The use of zinc and phosphate-coated steels would solve many maintenance problems and also effect manufacturing economies.

The tonnage of zinc and phosphate-coated material going into such products as soft drink coolers, truck bodies, aircraft templates, shower cabinets and home appliances makes it possible for steel mills to provide the necessary research, supervision, control, and operation for better coatings. This assures consistently high-quality and protects fabricators against such problems as poor cleaning, too light or too heavy coatings, coarse grain, and loose coatings.

Fully as important is the attention given to water treatment for rinsing and the stabilizing rinse with chromates, usually the final treatment. Research not only leads to constant product improvement but also provides information to users on finish performance of the sheet best suited to their use.

Limitations on the use of zinc-coated sheets because of the peeling hazard have been virtually eliminated. Electroplated coatings have no brittle alloy layer. With material coated by the Armco Zincgrip process, the alloy layer is so suppressed that its effect is negligible. This alteration of the alloy layer enables the ductile

zinc to be formed and drawn to the limits of the base metal. Metal finishing is minimized and the abrasive alloy layer no longer causes excessive die wear.*

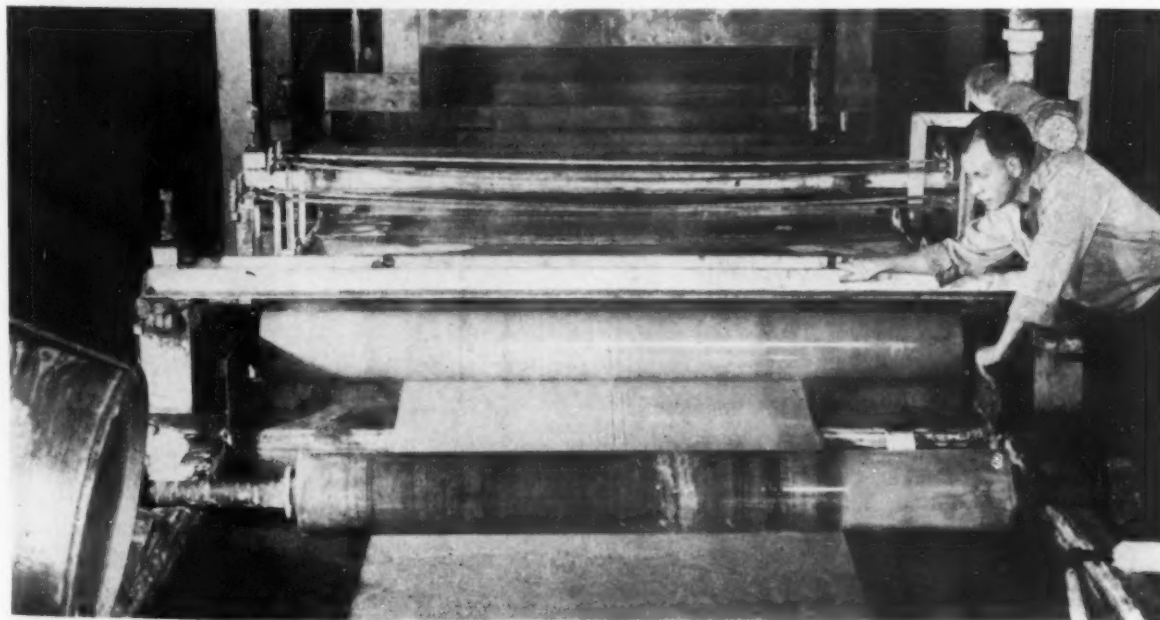
*See "Coated Steels Can Cut Breakage on Drawn Parts," by N. E. Hays, THE IRON AGE, Aug. 13, 1953, p. 135.

Many different satisfactory methods of forming, drawing and cleaning have been developed for zinc and phosphated-coated steel. In all cases it is desirable to use the lightest possible lubricant, such as kerosene. This permits the use of a noncorrosive type cleaner.

Cleaning by hand with a solvent usually will remove oil and grease, although the human factor must not be overlooked here. Vapor degreasing is frequently satisfactory for oils, grease and some oil soaps. The emulsion cleaners work well in power washing machines. Mild alkalis may be used under certain carefully controlled conditions. The latter two require water rinsing, and it is often well to use a chromic acid solution as a final rinse to insure neutralization from the effects of contaminated water. This is particularly important where a short-bake enamel is used, and is essential with infra-red baking.

The lighter zinc coatings are sometimes used by finishing departments which subsequently electroplate or porcelain enamel. They have the advantages of better drawability, rust resistance of the sheets and of drawn parts during storage, simplified cleaning, and shorter pickling time.

Satisfactory methods of joining have also been worked out. Wetting agents in the flux



STRIP processed through Armco's treating line receives a uniformly electroplated coating of zinc. This is followed by a Bonderite film which gives the strip an excellent paint base.

aid soft soldering. Hydrazine flux may provide a better answer. Brazing and silver-soldering practices are the same as on bare steel.

Arc or gas welding requires fume removal but the toxic effect of the fumes are not cumulative. This has brought about the substitution of zinc and phosphate-coated sheets for terne

plate in some applications. As with any coated steel, elaborate cooling of spot welding tips pays off. High-speed welding eventually may be done with refrigerated tips. The use of cold tips and proper squeeze and hold time reduces or eliminates the need for metal finishing the welds.

What About Cost and Floor Space?

Capital expenditures and floor requirements are important factors for fabricators to consider. The minimum equipment for phosphatizing requires three stages. Adequate cleaning and rinsing may add four more. While dipping is effective there are conveyor problems and high dragout losses to consider. Spraying entails additional pumps, spray chambers, headers, nozzles and related equipment.

The floor-space factor sometimes takes precedence over all others. It often has influenced manufacturers to install equipment in which cleaning and phosphatizing are combined in one operation. However, it is questionable whether one or two-stage equipment actually deposits enough phosphate on cold-rolled steel for a useful coating.

If a clean surface is all that is wanted, such equipment should be considered. This type of phosphate cleaning can be effective for removing rust when it is properly formulated. The normal phosphate-coating line is not set up for rust removal.

Installation of a coating unit should also include such considerations as heat supply, power supply, ventilation, water spray, maintenance and waste disposal in areas where

stream pollution has become serious. Neutralizing the large quantities of rinse water may likewise be an aggravating and costly problem.

Chemical cost for actual treatment may be a minor item in the total cost of the operation. Employment and training of competent technical personnel to maintain solution and quality control is definitely of major importance.

The economics of steel protection show that zinc offers the best value for the cost. This, plus the paint holding properties to the zinc, requires the fabricator to cover only visible areas. He can recover in reduced material and labor costs part or all of the added cost of the sheet. In addition, it improves quality and service of the product.

Phosphate cleaning or coating on steel in itself does not impart any rust resistance. Improperly done, it may even heighten the tendency to rust. The rust-proofing action of a phosphate coating begins only after the paint is applied. Superior paint adherence and the tendency to prevent creeping from a cut or scratch sometimes is misunderstood to mean that the phosphate coating gives rust resistance.



ONE-COAT PAINT JOB is all that is needed for this truck trailer. Hot-dip zinc-coated sheets for roof and electroplated sheets for sides protect trailer from malignant rusting.

Allegheny Ludlum

Hot Extrudes Stainless, High Alloy Steels



By E. C. Beaudet
Technical Editor

♦ HIGH SPEED press operation, automatic conveyors and facilities for handling production from billet to finished product are features of Allegheny Ludlum Steel Corp.'s hot extrusion department at Watervliet, N. Y. Stainless alloy tubing and shapes have been hot extruded on a commercial basis for the past several months. All standard 300 and 400 grades are used in normal production.

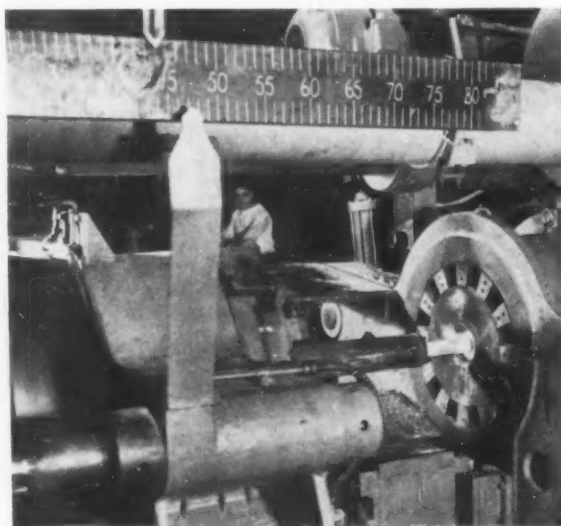
Location of the department, adjacent to the company's electric melt shop and bar rolling mill, provides a readily accessible supply of billets. Sufficient melting capacity exists to fill the extrusion mill requirements and a recently installed 22-in. blooming mill is well suited for rolling the billet sizes required for hot extrusion.

Principal units of the extrusion department include a tool room, conditioning lathes, heating furnaces, piercing, blanking and extrusion presses, pickle house, cold draw benches, annealing and shipping facilities.

Many of the tools used in the extrusion and piercing presses are of special design, and a complete tool and die shop operates to fill these needs. Here expendable tools such as dies, mandrels, dummy blocks and punch noses are produced. Particular care must be used in machining dies for extruded shapes. Entrance planes and radii are important in the control

♦ Stainless and high alloy seamless tubing and shapes are now being hot extruded on a commercial basis at Allegheny Ludlum's integrated extrusion plant at Watervliet, N. Y. . . . All standard 300 and 400 series grades are used . . . Seamless tubing, $1\frac{5}{8}$ to 4 in. in diam and 12 to 45 ft long, can be produced at a rate of 25 to 30 pushes per hr.

♦ When not running on tubing, press capacity is filled in with production of shapes 0.5 to 3.0 sq in. in cross-sectional area and 12 to 60 ft long . . . Titanium, zirconium, tool steels and high temperature alloys are being extruded experimentally with good results . . . The integrated plant has facilities for handling production from billet to finished product.



MANDREL is seen entering die container of press. Press has no gate lock for assembly. A swinging die arm speeds up die changes.

Swinging die arm assembly on press speeds die changes and simplifies tool alignment . . .

of metal flow during extrusion. Small milling machines and saws are used for these operations.

Hot rolled billets as received are conditioned to remove seams and surface imperfections. Solid billets for piercing press and for the extrusion of shapes are conditioned on a conventional bar turning machine, cut on an abrasive saw and contoured on the lead end in a lathe. Tubes are also extruded from drilled billets. For this, a hydraulically operated Barrett lathe is used which turns and drills simultaneously, then contours and cuts. Extrusion slugs up to a length of 24 in. have been drilled at a rate of $2\frac{1}{2}$ ipm. Hole sizes vary from $1\frac{1}{2}$ to 2 in. in diam.

When the extrusion cycle is started, billets are transported through the various operations on a system of automatic conveyors.

Press designed for high speeds

Electrically heated, Ajax barium chloride salt baths furnaces are used for both piercing and extruding. Electrodes are fabricated from 27 pct chromium alloy, 446 grade. Salt depth is 42 in. For piercing, an 18-station, 53,000-lb capacity, 1400 KW bath is used. A smaller 16-station, 49,000 pound capacity, 900 KW is employed for reheating billets after piercing. Both baths are circular in shape. At the charging and discharging station, the billets are mechanically loaded into steel baskets which are indexed by the charging wheel. These baskets then ride on a carousel-type conveyor which carries them through the bath back to the indexing wheel. The basket is then re-positioned to receive a new cold billet and the operation repeated. Although fixture life is limited to 50 hr of operation, the use of steel baskets is favored because of low initial cost.

When tubing is produced from pierced billets, the billets are heated, pierced, blanked, and recharged into the second salt furnace for reheating before delivery to the extrusion press. For solids the furnaces are operated in series to increase the heating capacity. Approximately 30 seconds elapse while the billet is discharged from the bath, transferred to the press and extruded.

The salt baths rapidly heat billets scale-free and evenly and deliver them to the press without overheating or excessive temperature variations. Billets are heated from room temperature to 2300°F in approximately 20 min. The light layer of salt adhering to the billet surface

during transfer to the press aids in reducing oxide formation.

A 600-ton vertical piercing press is equipped to handle $5\frac{1}{4}$ and 7-in. diam billets from 6 to 24 in. in length. Pierced holes range from 2 to $4\frac{1}{8}$ in. in diameter. There are three platens, the container, upsetting and piercing platens, which move in a vertical direction. The piercing and upsetting platens have a 46-in. stroke which allows clearance for a manipulator to position billets. The moving platens are kept in alignment by four vertical ways. The factor limiting pierced hole size is stem stiffness. Billets for piercing are first compressed in the container for centering, then pierced with the displaced metal flowing back which increases the length of the billet.

Billets are extruded on a 1778-ton double cylinder press. There are 1500 tons available on the main cylinder and another 278 tons on the mandrel cylinder. A press of this size was selected by Allegheny Ludlum because it most adequately covered the demand for products now produced. Both the piercing and extrusion press were designed and built by Lake Erie Engineering Corp.

The extrusion press has been designed for high speed operation, capable of closing at speeds from 600 to 1750 ipm. Tubing can be produced at a rate of 25 to 30 pushes per hr. Speeds during extrusion vary from 200 to 750 ipm ram speed. This speed varies depending upon the material, temperature and the extru-



BILLET CONDITIONING is done on this Barrett lathe equipped to drill, turn and cut. Drilling head is an integral part of the machine.

sion ratio. Exit speeds as great as 1700 ipm have resulted for some extruded products.

The conventional gate lock assembly is replaced by a swinging die arm assembly for positioning dies. This assembly speeds the operation as the discard butt of the billet is removed from the liner while the die is being changed. It also simplifies tool alignment.

The mandrel cylinder operates independently of the main cylinder, making it possible to make "fixed" as well as "floating" mandrel extrusions.

The main cylinder housing casting is held in a fixed position while the other components float, depending on the stress induced.

A variable accumulator system operating at 3150 psi furnishes the water necessary for high pressure movements. The system is supplied by three 300 hp pumps which are backed by a series of six air-water bottles and fifteen air bottles. The system can be used separately for piercing and extruding or combined as one.

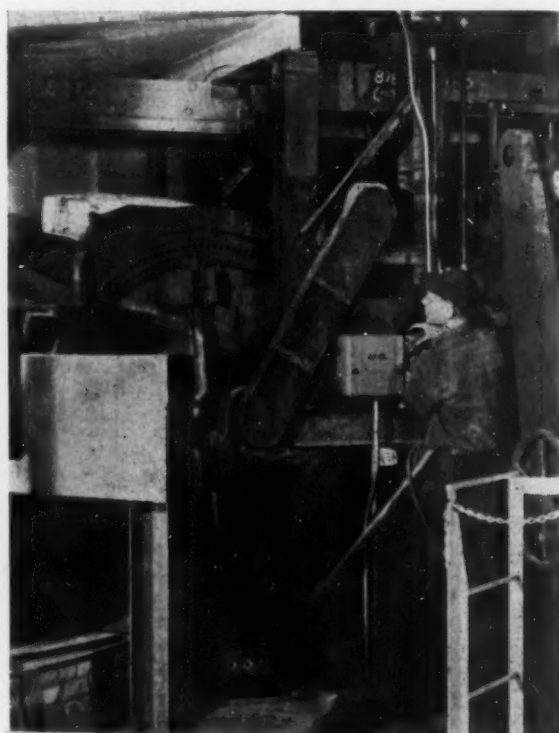
Also included in the plant is a 100-ton torsional stretcher-straightener. It is capable of straightening and de-twisting extruded shapes up to 5 sq in. of cross sectional area.

Tubes as long as 40 ft can be finished. Conventional continuous and batch annealing units are in operation. In the pickle house operations include caustic descaling, pickling and coating. Material is cold drawn.

In addition to the standard 300 and 400 series of stainless steels used, titanium, zirconium, tool steels, and high temperature alloys have



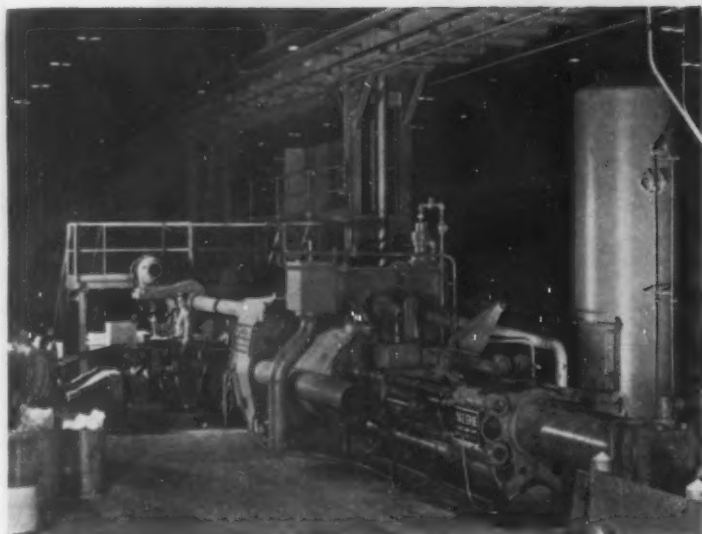
PIERCING press operates at 1500 psi. It pierces holes from 2 to $4\frac{1}{8}$ in. diam in billet. Glass is used for lubrication and insulation of billet.



SHUTTLE transfers billets from conveyor to iron baskets. Baskets are carried through the bath on indexing carousel-type arrangement.



HEATED billets from furnace are moved by this conveyor arrangement for delivery to 600-ton piercing press when tubing is being produced.



HEART of the plant is this 1778-ton Lake Erie extrusion press. Press capacity is 1500 tons on main cylinder and 278 tons on mandrel.

been extruded in development projects with good results.

With the working container, 5 $\frac{5}{8}$ -in. diam, sections which can be inscribed in a 3-in. circle, and vary from 0.5 to 2.0 sq in., are extruded. In the larger 7 $\frac{3}{8}$ -in. container, sections which can be inscribed in a 4-in. circle and vary from 1.5 to 3.0 sq in. are extruded. These size limitations are based on the flow resistance for 304 grade and they will change in the case of special materials such as tool steels and high temperature alloys. Extrusion ratios from 5 to 50 to 1 are made.

Sections as thin as 0.1 in. are extruded. Product lengths vary from 12 to 45 ft, but up to 60-ft lengths have been made.

Extrusion is a hot work process and in general hot rolling tolerances are held. There are three major reasons for considering hot extru-

sions; (1) For shapes more intricate than can be produced on a conventional rolling mill, (2) Small tonnage orders where roll and setup charges cannot be liquidated and (3) Special alloys which do not lend themselves to rolling, in some cases can be extruded more easily with less scrap loss. On linear dimensions as little as ± 0.010 in. can be held. Concentricity on tubing is held within ± 10 pct of mean wall thickness.

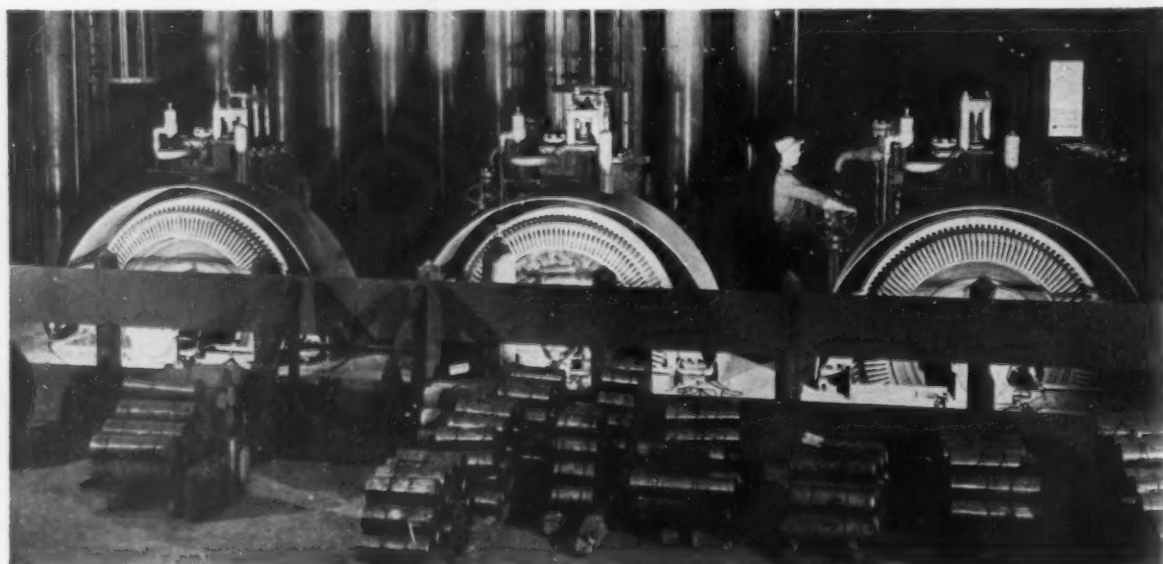
Although tubing accounts for most of the tonnage, Allegheny Ludlum is putting considerable emphasis on the extrusion of shapes. Orders have been produced in grades such as 403, 405, 410, 303C, 304, 321 and 310 for unequal leg angles, channels and similiar shapes. These shapes were chosen for the metal savings involved over conventional rolling and the resultant cost of machining excess material.

No sharp corners are held; generally external corners have a radius of $1/32$ in. and internal corners a radius of $3/16$ in. Angular tolerances depend on design which controls metal flow. Often a test die is made to determine the degree of close up and to properly compensate for it.

In tubular extrusions, both pierced and drilled billets are used. Tubes from 1 $\frac{5}{8}$ to 4 in. OD have been produced in wall thicknesses from 0.121 to 0.312 in. Walls below 0.200 in. are extruded from drilled billets. Heavy walled tubes are extruded from pierced billets. Below 2 in. diam, the piercing problems multiply and drilling becomes more economical.

In piercing, $1/16$ in. runout or $1/8$ in. wall variation is permitted, L/D ratios, billet length to pierced hole size, are important. An 8 to 1 ratio is the maximum used successfully.

Glass serves a double function, acting to both lubricate and insulate the billet during extrusion. The type of glass used varies depending on whether it is for die, mandrel or liner.



PIERCING and extrusion presses operate off pressures from 1500 to 3150 psi. The system is this variable accumulator system using water supplied by three 300-hp pumps.

PNEUMATIC TUBES

Speed Steel Plant Communications

♦ Quality control samples, bulk mail distribution and interoffice communications are handled efficiently by pneumatic tube systems at a large eastern steel plant . . . An average of 10,000 pieces of mail are handled each day . . . One system serves 20 departments.

♦ Samples carried range from prepared metal poundings, drillings and nibblings, slag specimens, etc., to ladle or block test specimens weighing 4 to 5 lb . . . Sample carriers are 3 in. and 5 in. long . . . Larger carriers are used for ladle test samples.



A. M. Brown
Airtube Div. Mgr.
Lamson Corp.
Syracuse

♦ PNEUMATIC tube systems installed at a major steel company in Eastern Pennsylvania provide fast, easy communication between various steelmaking activities. Two systems handling bulk mail distribution and interoffice communication save the company an estimated \$24,000 a year. A third system aids processing operations by speedily carrying samples from steel-melting units to quality control laboratories. All three systems were engineered and installed by Lamson Corp., Syracuse, N. Y.

An average of 10,000 pieces of mail are handled each day by this method. In heavy rush periods tube carriers are dispatched at a rate on one per minute. Their traveling time is 30 seconds for a trip that would take a messenger five minutes.

Pneumatic tube lines are made of 4-in. diam seamless steel tubing connected at the joints by flanged couplings. The air-tight couplings are fitted with rubber gaskets which allow for expansion and contraction due to temperature changes. All bends in the system are made at 60° angles which allows the maximum in container speed. Momentum gained on straight stretches helps to take the containers around the bends with only momentary slackening of speed.

The third pneumatic system handles quality control samples from five openhearth and electric furnace steel-melting units. Three lines connect with the plant's central spectrographic laboratory and two with a large conventional openhearth quick test laboratory.

Aside from "pin" samples (7/32 in. in diam x 2 in. long) required for spectrographic analysis, types of samples handled range from prepared metal poundings, drillings and nibblings, slag specimens, etc., to ladle or block test specimens which may weigh 4 or 5 lb. Two sizes of sample carriers, 3-in. and 5-in. long are used. The 3-in. size is used most since it accommodates all but large ladle-test samples.



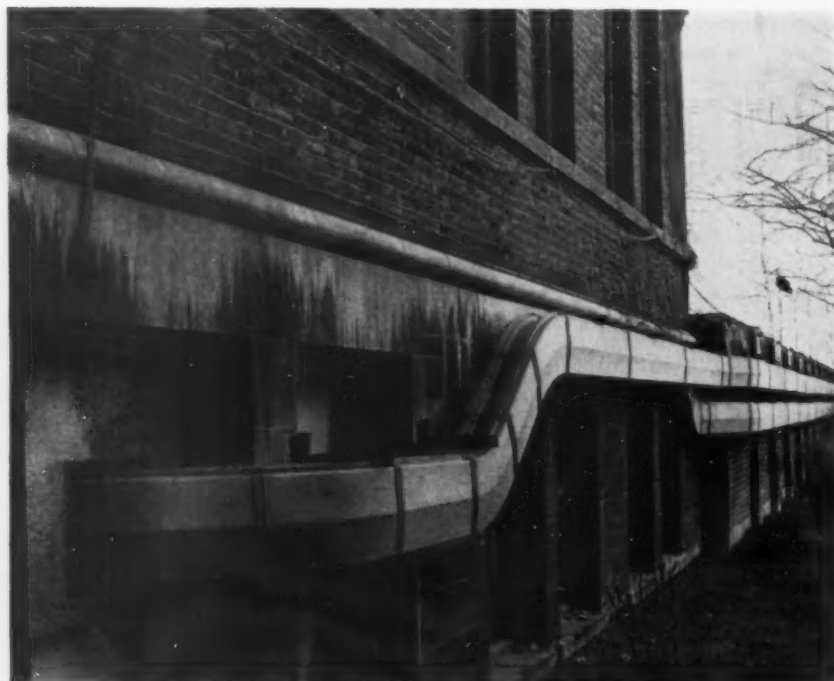
↑ Bulk mail transportation system extends between the mail room of the corporative office building, shown here, and the factory office building mail room 500 ft away. Carrier return line, left, is part of system for transporting bulk mail to factory office building.

Remainder of tubing is part of 12-station interoffice system serving 20 departments within the building. Typical functions performed include: (1) Sales department mail and customer records are sent via the pneumatic tube system to the sales department mail and file room for sorting, (2) The purchasing department uses the tubes for all communications with the accounts payable division and (3) The

communications department sends telegrams by carrier to various departments.

Departments concerned with order processing offer a good example of how the system facilitates paper work by speeding up communication. Each of these departments which the order must go through represents a seconds-long tube trip in place of what might be a minutes-long messenger trip.

Orders are first received in the sales department and entered, then forwarded to the credit department. From the credit department they are sent to the traffic department, then to production planning, and on to the mill.



← Part of the 500-ft tube line which carries bulk mail from the corporate office building to the factory office building. Tubing is mounted on a fence between the two buildings.



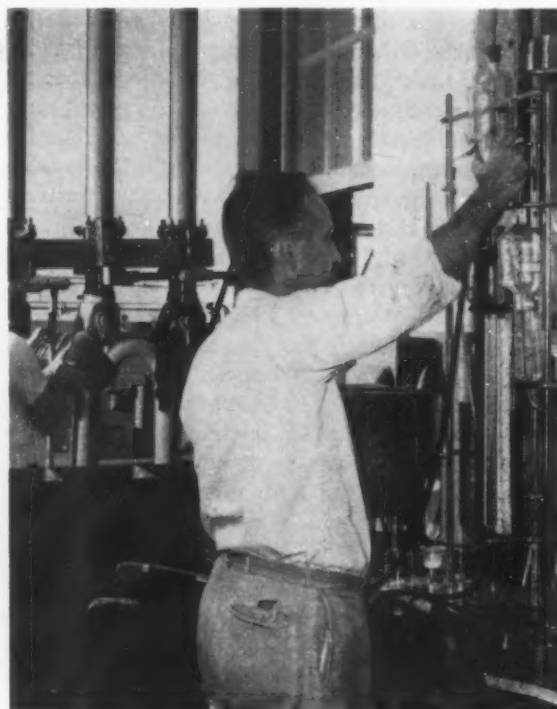
Quality control samples from five openhearth and electric furnace steel-melting units are handled by three miles of pneumatic conveyor systems. Three systems connect with the spectrographic laboratory, shown here, and two with a large conventional quick test laboratory. The longest conveyor line serving the spectrographic laboratory measures 5300 ft, while two

other lines serving this laboratory measured respectively 2200 and 3200 ft. Traveling time for delivery of samples varies according to the size or weight of the specimen and whether the 5-in. long container is used. One of the shorter containers carrying lighter types of specimens normally traverses the 5300 ft in about 2½ minutes.

Samples from the melting units arrive at the main laboratory building receiving station located in the "wet" chemistry laboratory. Pit tests for spectrographic analysis are transferred into smaller containers and sent down to the spectrographic laboratory in the basement of the building. The load carriers are discharged at the laboratory into a container constructed of welded plates containing heavy wadded canvas to serve as a cushion.

An independent pneumatic system serves the separate quick-test laboratory, shown here, which is used to provide control analysis data for two openhearths. These are openhearths not connected by tubes to the main laboratory.

Due to great length of one openhearth, it was necessary to provide three sending stations for samples, one in the middle and one at either end of the floor. One receiving station located at the middle of the floor is used for the return of empty carriers. Containers carrying test specimens can be inserted at any one of three sending stations in the openhearth plant.



DEBURRING: Better Methods Cut Costs

Part II

By John E. Hyler

Consultant
John E. Hyler & Associates
Peoria, Ill.

♦ Improved methods have taken the edge off high production costs in burring, chamfering and edge-breaking operations . . . Special machinery effectively burr and chamfer gear teeth at high speed . . . Air blast methods handle both large and small parts.

♦ Progressive development of tumbling methods has put time, stone, compound and water on a formula basis . . . Large parts may be tumble-burred effectively by locating parts in special tumble barrel fixtures.

♦ Special cutters and rubber-backed abrasive materials add flexibility to deburring operations . . . Power brushing, using special rapid feed fixtures, has cut unit burring costs and speeded many deburring operations.

♦ IMPROVED DEBURRING methods and more extensive use of power have been key aids to lower costs on many burring and chamfering operations. Power brushing, blasting, special chamfering machinery, special abrasive materials and cutting tools, improved burnishing and tumbling methods have played a large part in meeting the tremendous demand for burring, chamfering and edge-breaking operations.

Need for high gear tooth accuracy and smooth, silent meshing qualities have led to development of many special machines for burring and chamfering gears. One machine removes burrs from 300 teeth per minute on splines, spur and helical gears. Cutterheads may travel upward or downward. Cluster gears, planetary gears, stem gears, speedometer and timing gears are readily deburred. Burrs ordinarily difficult to reach are readily removed.

The machine uses standard tool cutters which need be sharpened only on the face angle. This keeps tool-sharpening time at a minimum.

Gear deburring machines which employ pencil cutters are also widely used. With these

it is possible to deburr gears and to form tooth end profile in a wide variety of forms, ranging from a regular wedge to a combination of circular arcs. Machines using such cutters can handle practically any type of gear, including spurs, helicals, hypoids and internals. They are for burring chamfering gears having a sliding mesh, or shifting gears such as are used in clutches and transmissions. Proper control of tooth end form on such gears has much to do with their ready sliding engagement.

Cutter spindle on one machine of this type rotates in a stationary position as the work-piece is moved to the tool. When using a pencil-type cutter, the work has a constant motion radially and a reciprocating motion axially. These combined movements are used to control the form generated on the ends of the teeth. When using a hollow mill cutter, the work is indexed, temporarily held in a fixed position, then advanced to the cutter.

Other units use fly cutters for deburring internal and external splines. Different machines are employed for deburring external and internal splines. Cutter rotation is syn-



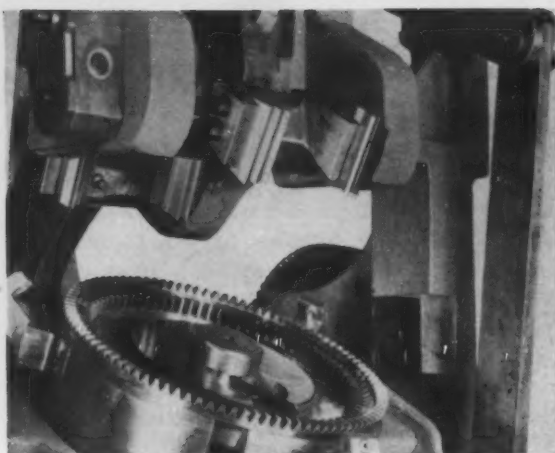
IMPROVED TUMBLING methods and formulas simplify tough burring and chamfering jobs.

chronized with work rotation. On both machines, a circular form tool is sometimes used for deburring. Where it can be used, this type tool reduces cutter maintenance to a minimum.

The entire tooth form of helical and spur gears from $\frac{5}{8}$ to $9\frac{1}{2}$ in. in diam can be burred and chamfered on another gear chamfering machine. It also handles external straight and involute form splines. A form cutter mounted on a rocking tool block goes through a generated cutter action when chamfering. A pilot gear operates in conjunction with the form cutter to control the cutting action.

A special machine will deburr and chamfer all teeth of a 14 in. diam, 156-tooth flywheel ring gear in 8 seconds. The gear is loaded into the machine by slipping over 3 rolls on a fixture around which it turns. In this position, it meshes with a drive gear. A locating finger, moving with the cutting tools, locates the gear teeth radially on each tool stroke. The drive gear indexes continuously. A combination rocker-arm motion actuates the form tools and generates cutting action. Depth of cut is readily adjustable.

Efficient burring and chamfering machines are available for hypoid pinions and for zerol



FOUR FORM TOOLS chamfer the entire tooth contour of this zerol bevel reduction gear.

bevel teeth. One such machine deburrs and chamfers tooth edges at both heel and toe of an 8 in. diam, 99-tooth, 12.53 in. pitch aircraft zerol bevel reduction gear in 30 seconds cutting time. Four form tools are used to chamfer the entire tooth contour at both heel and toe ends. Tools are actuated by a combination rocker-arm motion.

Abrasives are widely used for deburring because of their versatility. Often the type of work governs the method used. Parts are manipulated against sanding belts, abrasive wheels, or other abrasive units. For small parts some type of leather finger guard is often used to protect fingers from contact with the abrasive or sharp burrs.

Many abrasive wheels have been specially developed for use in deburring operations. A soft rubber binder is sometimes used to cushion the abrasive, allowing limited adaptation to the work contour. Rubber-cushioned abrasive material comes in wheels, blocks, rods, sticks and special shapes. Abrasive wheels made of this material can be used on regular wheel stands.

Both large and small wheels are often mounted on portable grinding units for use where practically no stock is removed except

BURRS CAME OFF these gears in tumbling. Quantity and size of stone, type of compound and time, control efficiency of tumbling operation.



Power brushing setups help cut deburring costs . . . Use fixtures to speed output . . .

the burr. This soft rubber wheel leaves a pleasing finish. With a tougher binder, to increase abrasive action, a small amount of stock can be removed. Polishing sticks or plugs of this material may be chucked in a drill press, lathe or other machine to simplify burring in tighter corners. In some cases, both polishing and burring operations may be combined.

Disk cutters, which have teeth ground into them so they cut on the milling principle, are particularly suitable for removing flash from plastic parts. Small midget mills are useful on some irregular burring which must be performed free hand, or on operations which involve some forming or shaping with burring and smoothing. Such cutters are often chucked.

Automatic polishing and buffing machines are capable of a certain amount of burr removal. The same is true for buffing wheels on an ordinary wheel stand. Where any considerable amount of burr removal is involved, however, it is well to consult the manufacturer of the automatic equipment. Some of these machines, incidentally, are now being equipped with abrasive-belt heads which greatly increases their versatility.

Many parts can be deburred at low cost in special blasting machines. These use either a continuous rotating process for small parts, or a stationary clamping arrangement for larger parts. Both types will remove light burrs from metals ranging from aluminum to mild steel. Maize or a similar "soft" material is air blasted against parts to be deburred. The ma-

chines are particularly suitable for deburring "soft" parts which might be damaged by other methods.

In a typical setup for burring relatively small parts, a ferris-wheel type fixture rotates between two reciprocating blasting guns at approximately one revolution every 5 minutes. The wheel carries from 16 to 24 work pieces in wire holders. Parts are loaded and unloaded at one point outside the cabinet.

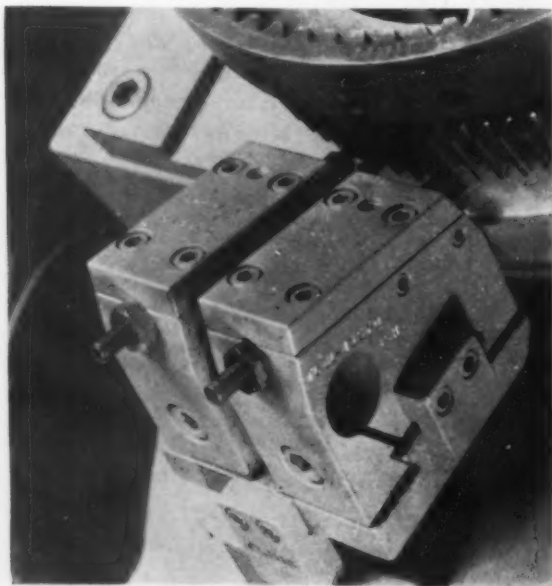
Blasting material is constantly reused. After blasting it falls into a funnel, is picked up by the air stream and recirculated. A suction system removes dust from the blasting operation.

Blasting and wire brushing effective

A second machine, built to handle larger parts, rotates a single part on a fixed axis. Typical parts handled include impeller housings and rotors. Blasting guns must be at different angles, depending on the part, for highest efficiency. Machines may have 2, 4 or more blasting guns.

Power driven brushes can often be effectively used for fast, efficient burring operations. Brushes have been successfully used for deburring notches, threads, and recesses difficult to burr properly in any other manner. In one typical case, a circular driven brush is held on a vertical-axis spindle. Brass parts, on a dial-plate fixture, rotate past a point of contact with the brush, exposing the part surface to the rotating brush.

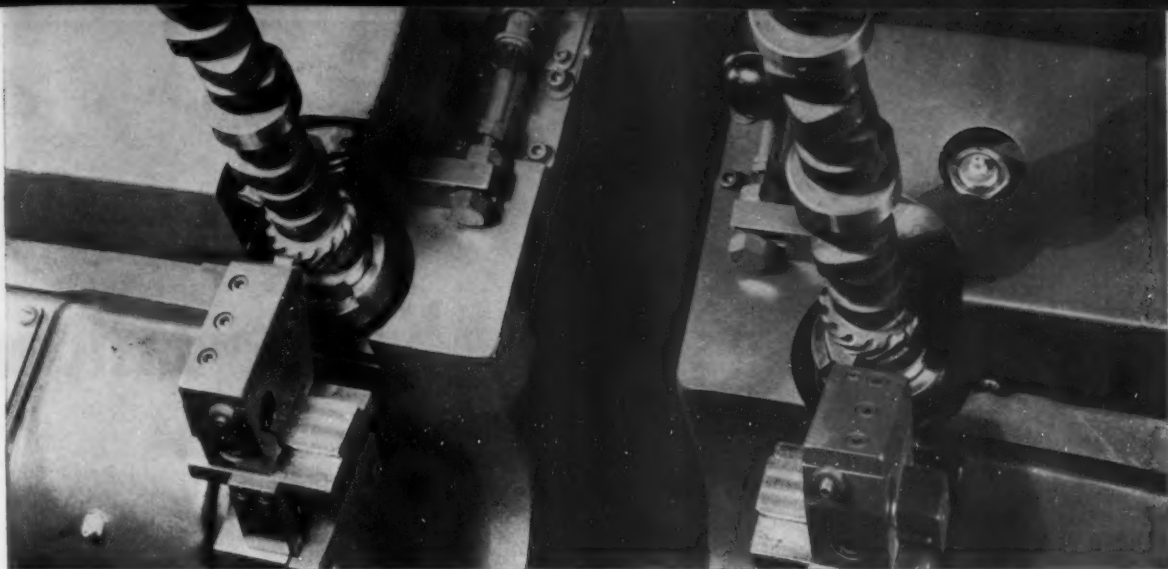
Edges of very tiny holes, where such holes occur in large numbers, have been successfully deburred by a combination of brass wire brushes and compound. A work-holder brushing lathe, has been developed for deburring gears and similar parts to high advantage. Gears requiring no special relief or end form-



HELICAL TIMING GEAR at end of camshaft is deburred in this "woodpecker" type machine.



ABRASIVE RUBBER-CUSHIONED rod in drill press effectively burrs, polishes guide hole.



EXTERNAL TEETH are deburred on Sheffield gear deburring machine. Tool costs are low.

ing of teeth may be deburred by brushing.

In feeding relatively short parts to a large brush for burring a tube feed fixture may be used. A portion of the pipe is cut away to expose a portion of the part as it moves past the brush. Bolts, set screws or rod-type parts fed in this manner spin as they contact the brush. The entire surface is exposed and uniformly brushed and deburred. On either a dial or a tube-type brushing setup one or more brushes may be used. Bristles, readily deflect from their normal path of travel, permitting the brush to adapt to the contour of the parts being deburred.

Burnishing and tumbling are effective methods for removing burrs. Combining a burr-removal with burnishing often makes it possible to eliminate an intermediate deburring operation between stamping and burnishing. Considerable success in removing burrs in the burnishing barrel has been attained using a relatively-soft burnishing material.

In removing burrs in the burnishing barrel it is important to avoid peening burrs flat against the surface of the material. Very hard burnishing material often has this peening effect. Conversely, when very soft-annealed burnishing material is employed, the burrs bite into it. In this biting process, burrs are more effi-

ciently removed. Burring compounds should be carefully selected for work in hand.

An operator loads chips and parts into the machine often with a hoist pan. Using this equipment, one operator can service several machines.

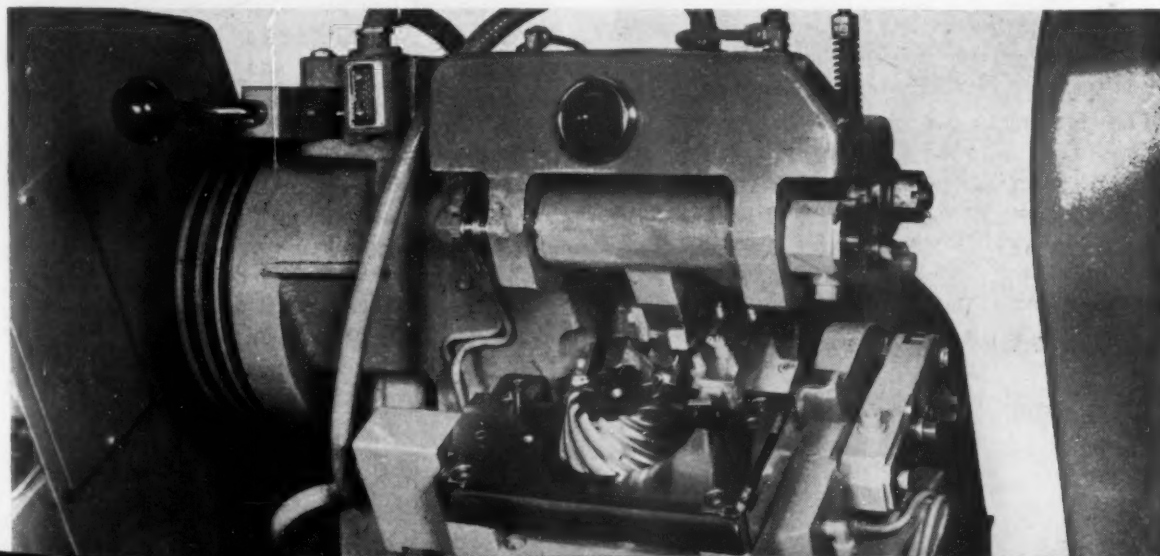
After adding water and compound, cylinder doors are shut and cylinder set rotating. While one load of work is being tumbled processed parts are separated from mineral chips, sometimes with a magnetic separator, sometimes by screening. Grinding, descaling, polishing, bright honing, and coloring may all be performed in this equipment.

Tumbling is most effective in deburring corners, edges, and convex surfaces, where they are well exposed to abrasion by the cascading action of the mass. External corners can be barely broken, or processed to a complete radius, as desired. Amount of metal removed is governed by the size of chips used, the compound, and time of tumbling.

Larger pieces, which cannot be allowed to tumble in the barrel can be held in any desired position inside the revolving barrel, in fixtures designed for the purpose. These can be designed so that one part cannot contact another during tumbling.

WHILE HYPOID PINIONS are chamfered on acute side, burrs are removed from teeth, and

periphery of large end is chamfered in machine developed by Modern Industrial Engineering Co.



Handles 7000 items—

Versatility—Key to Efficient

◆ Five gas-fired, batch-type units economically heat treat 7000 types and sizes of precision alloy fastenings at H. M. Harper Co., Morton Grove, Ill. . . . Up to 50 tons of fasteners are processed weekly . . . All standard and special heat treatments are performed in the same furnaces.

◆ Oven, pit and slot-type furnaces, plus descaling baths, are standard units . . . Initial cost of equipment is low . . . Minimum floor space required aids in locating units for production efficiency . . . Batch handling speeds process cycles . . . Automatic temperature controls are used.

◆ **FAST, EFFICIENT, LOW-COST** heat treatment of more than 7000 different ferrous and non-ferrous precision fastenings is the production record hung up by H. M. Harper Co., Morton Grove, Ill. Using five gas-fired, batch type units, the plant handles up to 50 tons of assorted parts each week for inventory and special order requirements.

Heat treatment of stock items is standardized but special fastenings often require complex individual treatments. To maintain a high level of customer service consistent with economy, all heat treating is done in standard, flexible furnace equipment.

Gas-fired, batch-type units were chosen for their versatility in meeting changing production demands. Only minimum initial investment is usually required for this equipment, and the small floor space occupied by the units permits them to be located for maximum production efficiency.

Standard batch-type units used at the Harper plant include: Two direct-fired oven furnaces; one direct-fired pit furnace; a conventional slot-type forge heating furnace; and sodium hydride descaling baths. All equipment operates on line-pressure natural gas. Combustion air is supplied by individual compressors.

Fastenings are produced to meet corrosion problems found in the chemical, petroleum, air-frame, jet engine, paper, and food industries. Most of these jobs require fastenings of (1) brass, (2) Naval bronze (3) silicon bronze, (4) Monel metal, (5) 18-8 and type 316 stainless steels, (6) aluminum, and (7) high temperature alloys.

Stock fastenings range in size from tiny socket head screws to special oversize bolt and

nut assemblies. They are fabricated in 6 basic types: Bolts, nuts, screws, rivets, washers, and accessories. Raw material is received in either wire or rod form. In many cases further wire and bar drawing operations are performed.

Heat treating is required twice during production operations. First, all raw material, in rod or wire form, is annealed or stress relieved during the processing cycle. Secondly, manufacture of the finished product requires these same treatments, plus certain solution, aging, hardening, and drawing treatments. In addition, hot forging and descaling, although not widely identified as heat treatments, are performed when necessary.

Practically all this heat treating of 50 tons per week is done in just 5 Surface Combustion standard rated furnaces. All 5 units operate on low pressure natural gas at about 6 in. water column line pressure. Combustion air is supplied at about 1 lb pressure.

Oven furnaces anneal most work

Desired air-gas ratios are obtained in each burner by automatic proportioning equipment consisting of low pressure inspirators and zero governors. By utilizing combustion air at 1 lb pressure to entrain gas at zero pressure through the governor, correct combustion ratios are maintained within the entire operating range of each furnace.

To meet general heat treat requirements, two of the five units at the Harper plant are direct-fired, large oven furnaces with over and under firing burners.

The first of these units has a 20 sq ft hearth and a 48 in. wide by 24 in. high door opening. Temperatures range from 1200° to 1950°F with automatic proportioning burners firing into

Heat Treat Layout



By K. G. Hookanson
Chief Metallurgist
H. M. Harper Co.
Morton Grove, Ill.



Production fastenings range from tiny screws to special oversize bolt and nut assemblies.

ceramic tunnels in the furnace side walls. Upper single-nozzle burners fire along the arch of the furnace roof; lower twin nozzles fire across the furnace between piers supporting the hearth.

In this furnace, annealing, stress relieving and some hardening of finished fastenings is done in work baskets. Any wire coils heat treated in the unit are placed directly on the hearth by lift truck forks. An accompanying photograph shows a unique pier arrangement of the furnace hearth to allow rapid charging and discharging of these baskets and coils.

Complete automatic control

The second oven furnace has a slightly larger hearth area of about 31 sq ft and a door opening 54 in. wide by 39 in. high. The same pier-hearth arrangement is incorporated for rapid charge handling. A wider temperature range of 600° to 2200°F is available in this unit, due to a special Conjecto-firing system adapted to the direct-firing tunnel burners.

When the furnace operates at temperatures below 1000°F, one bank of nozzles in the under-firing twin-nozzle burners injects auxiliary air only. The other bank of nozzles burns an air-gas mixture as usual. Action of the auxiliary air accelerates circulation, thus increasing heat transmission by convection. At higher temperatures, troublesome "over-shooting" is prevented by shutting off one bank of burner nozzles as operating temperature is approached.

Both oven furnaces are equipped with automatic temperature controls and safety equip-

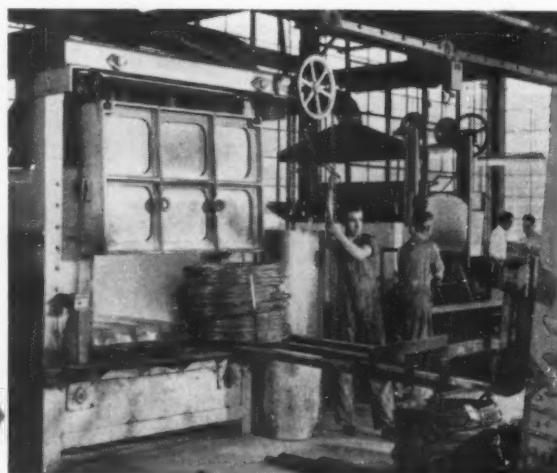
ment. Circular chart indicating and recording controllers with manual balance potentiometers of 0 to 2400°F range are used for high-low control. If air pressure drops below a set safety level, a manual reset gas valve in conjunction with an air line pressure switch shuts off the system.

Inspirators on both oven furnaces incorporate variable orifice assemblies. These permit easy, rapid adjustment of fuel-air ratio to obtain oxidizing or reducing atmospheres. A reducing atmosphere is used for treating some non-ferrous parts and an oxidizing atmosphere is used for stainless parts.

The third heat treating furnace is a pit type forced convection unit used principally for stress relieving Naval bronze. It is also used for solution and aging treatments on some aluminum alloy fastenings.

Maximum heating rate of the pit furnace is about 1250 lb per hour. Work basket measures about 30 in. in diam by 36 in. deep. Automatic

Pier arrangement of oven hearth permits rapid charging and discharging of baskets and coils.



High product quality due to standardized methods . . .

proportioning tunnel burners, of the self-cooling type, fire tangentially through the furnace casing at the base. A fan in the bottom of the pit distributes heat evenly throughout the charge. Maximum operating temperature is 1250°F. An overhead hoist system charges and discharges work baskets.

An appreciable amount of hot forging is required for the manufacture of stainless and bronze nuts, from 1/2 to 2 in. diam, and bolts to 2 in. in diam. Heating for forging is done in a gas-fired slot furnace of conventional type.

Temperatures from 1400° to 2400°F are available. Automatic proportioning, piloted tunnel burners fire across the 41-in. wide heating chamber from both sides of the furnace. A 4-in. high slot opening, extending 36 in. across the face of the heating chamber, is equipped with an air blanket and heat screen to protect the operator from intense heat and glare. Heating chamber depth is about 14 in. This furnace is rated at about 180 1 in. diam stainless steel rounds per hour at 2200°F. Temperature is on-off controlled through an indicating millivolt meter (0°-2400°F) and thermocouple.

The sodium hydride descaling setup is one of the most important units in the manufacture of these precision fastenings. Equipment consists of a Surface Combustion rectangular pot type furnace with gas-fired suction immersion burners and a dissociated ammonia generator.

Fastenings to be descaled are loaded in baskets and lowered into a 700°F sodium hydroxide bath containing about 2-1/2 pct sodium hydride. The sodium hydride, which is the active descaling agent, quickly and thoroughly removes all oxide scale with minimum loss of base metal. Dimensional accuracy is constantly maintained because of the low temperature, plus the fact that all bath action stops automatically as soon as the last oxide is removed. All stainless

steel, nickel base, and high temperature alloy fasteners can be descaled in this unit.

About 1250 lb of fastenings are descaled per hour, with average basket loads of 600 lb. Loads are held in the bath for about 1/2 hour and then given cold water and acid rinses to remove any "smut" clinging to the metal parts. Coils of wire which may require descaling are handled on hairpin hooks.

Production scheduling is rather complex as stock items must always be available in a variety of types, sizes, and alloys. At the same time special orders must be handled with speed and manufactured to high standards.

Testing controls quality

These conditions place a considerable strain on every phase of the production picture from raw material to finished product. Heat treat equipment is of fundamental importance to fast production. It must be dependable, and flexible enough to handle ferrous and non-ferrous alloys with maximum efficiency and economy. Uniformly high product quality is largely due to this standardization of equipment and procedures.

Constant checks are made on raw materials, processes, and final products at the Harper plant. Incoming materials are checked for chemical composition, hardness, hardenability and tensile strength.

Process inspections start with wire drawing and carry through to the final operations. Tensile and hardness tests follow the annealing, stress relieving, or hardening treatments. Metallographic samples are prepared for microscopic examination when required.

High temperature bolting for use in jet engines is tested to military standards.

DESCALED COIL moves from salt bath at extreme left through water and acid baths.



RIGID TESTS accompany all production stages from raw material to final heat treatment.

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Tangible benefits exist for you in the continuing improvement of facilities at Newport Steel. Your orders move along faster, from electric furnace to loading dock. Greater flexibility in production schedules ensures delivery of famed Newport quality just when you want it. And this helps relieve you of maintaining large and expensive inventories. Let us call and discuss other advantages of buying from Newport Steel, situated in the heart of the nation's greatest industrial growth.



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Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

PRODUCTS OF NEWPORT STEEL

- Hot-Rolled Steel in Coil
- Hot-Rolled Pickled Steel in Coil
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- Hot-Rolled Sheets
- Galvanized Sheets
- Galvannealed Sheets
- Colorbond Sheets
- Hot-Rolled Pickled Sheets
- Electrical Sheets
- Alloy Sheets
- Roofing and Siding
- Eave Trough and Conductor Pipe
- Culverts

Newport Steel

CORPORATION

NEWPORT, KENTUCKY

Producers Pare Stamping Costs

Modern Coil Handling Equipment Widens Use of Low Cost Coil Stock

The battle to keep down costs is going well for producers of stampings. Coil stock and modern coil handling equipment are the decisive factors. Coil stock, with only two scrap ends to its entire length is far more economical than strips of straight stock with two scrap ends to every ten feet. Moreover, the type of coil loading and handling equipment built by F. J. Littell Machine Co. makes coil stock easier to handle than straight stock. Stamping producers are taking full advantage of these developments. Coil stock and Littell Coil Hooks, Reels, Straightening Machines and Automatic Roll Feeds are in wider use today than ever before.

Hooks Serve Two Ways

... Littell Hooks make it a simple matter to unload coils on delivery, and to load reels. The variety of sizes have lifting capacities from 1,000 to 40,000 pounds.

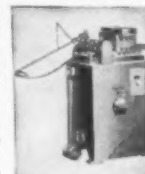


Two Types of Reels ...

Littell Coil Cradle Reels mount heavy coils, up to 30,000 pounds. Spindle Reels handle coils up to 40,000 pounds. Each type is available in plain or motor driven designs.



Straighteners Flatten Stock... Removing curvature from coil stock as it passes from reel to punch press die is the function of Littell Straightening Machines. All models are the same basic design. Variation is in the number and diameter of straightening rollers employed ... from 1" to 90" in width, and from .010" to .125" thickness.



Automatic Roll Feeds ... Press output in many shops has been multiplied five times by simply attaching Littell Roll Feeds to presses for blanking, drawing, piercing, or cut-off work. The Littell Roll Feed is used with compound dies, single station dies, and progressive dies. Standard models are easily attached, serve all types of presses, and handle all standard widths and thicknesses of stock.

Descriptive details and prices on Littell Hooks, Reels, Straighteners and Roll Feeds are available on request. Inquiries are given immediate attention when addressed to

F. J. Littell Machine Co.
4141 N. RAVENSWOOD AVE.
CHICAGO 13, ILL.

Technical Briefs

Engineering

Magnetic Clutch:

"Frozen" powder drives fans, compressors, autos.

Magnetizable powdered metal is the secret of electro-magnetic clutches, brakes and other power transmitting and control units which have attracted the interest of many design engineers.

Use of electro-magnetic power transmission devices, such as those made by Eaton Mfg. Co. of Cleveland, is growing in both the automotive industry and in applications to machinery.

Coil Is Energized

The unit consists of a coil enclosed by a magnetic circuit. When the coil is energized, the fine metal particles mixed with dry additive lubricants are magnetized and drawn together in a strong load-transmitting bond when the control current is applied.

The mixture is "frozen" and "unfrozen" in direct proportion to the amount of current. Precise control of rotating motion is obtained by operating a switch or rheostat.

Some Applications

Engineers have shown interest in the application of this principle to automatic transmissions, automotive air-conditioning, fan drives, compressor drives, power take-offs, machine tools and punch presses.

In motor car air-conditioning applications, now in production at Eaton's Heater Div., either a single or two-speed magnetic clutch acts as power take-off from the engine to drive the compressor. When the two-speed magnetic clutch is used, it automatically compensates for differences in engine rpm's at low and high vehicle speeds.

Tried In Auto Fans

Advantages of the powdered metal and dry lubricant type mag-

IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 105. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

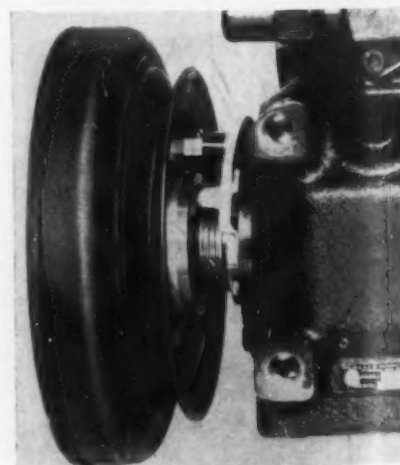
netic clutch are seen in the operation of automotive cooling system fans.

Conventional engine cooling fans run whenever the engine is running. Actually, the fan is required for cooling only during a small part of the operating time. By installing a magnetic clutch between fan and fan pulley, the fan is turned on and off by a thermostat according to engine temperature.

Test Results

In an 1100-mile test run on a fully loaded truck, the fan equipped with an electro-magnetic clutch operated for only 35 minutes and 15 seconds during a total of 27 hours and 40 minutes on the road.

Figured on the basis that a standard fan on the test vehicle requires 9 hp at 2000 rpm, it would have required a total of 248.9 hp-



AIR-CONDITIONING compressor for automobile is operated by magnetic clutch.

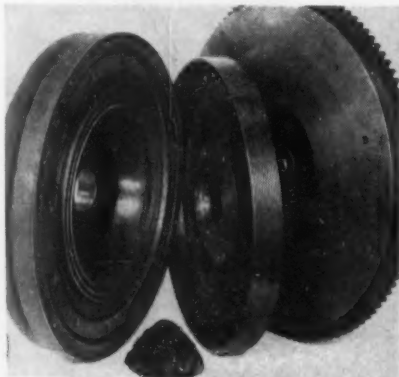
hours on this test run, whereas the electro-magnetic clutch equipped fan required less than 6 hp-hours—a saving of more than 242 hp-hours.

Compensates for Load

Manufacturing plants are also finding a wide range of adaptability for clutches and brakes using the powdered metal and dry lubricant principle. In the control of conveyor equipment, the magnetic device can compensate automatically for load variation. In punch presses, improved safety and substantial reduction of maintenance are outstanding advantages.

Little Wear Found

For transmission or control of power without interruption, the long life and trouble-free operation of these devices is a distinct asset. Laboratory and field tests show that wear is insignificant.



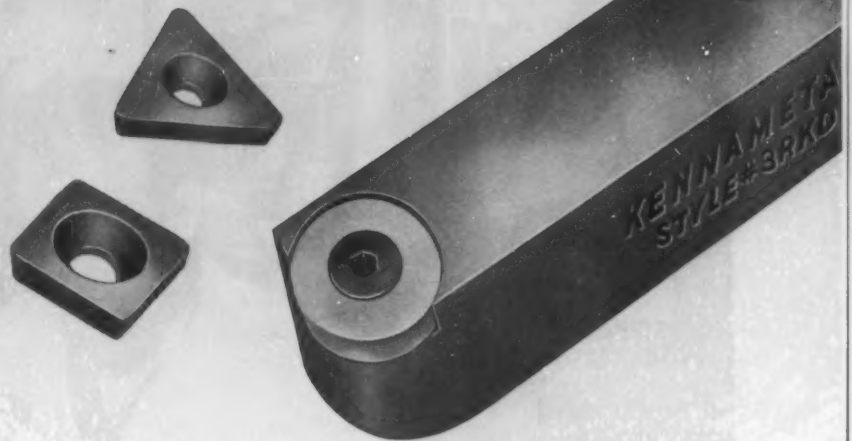
MAIN DRIVE clutch showing field, drum, powder and fly-wheel.



AUTO COOLING fan is operated by thermostatically controlled magnetic clutch.

Turn Page

It Pays to Know Your KENDEX* Tooling



There are no substitutes for Kendex inserts. Only Kennametal Inc. makes them—and they're made only of Kennametal.

Kendex inserts are round, square, or triangular tool blanks having multiple, precision-ground cutting edges; designed for screw-mounting to enable fast, accurate indexing without resetting the tool. When all cutting edges of a Kendex insert have been used, the insert is thrown away—no resharpening.

You can obtain these advantages with Kendex tooling: (1) Minimize downtime for tool changing; (2) Eliminate tool grinding expense; (3) Prevent temptation to "save" money by reconditioning tools that have outlived their usefulness. Ask your nearest Kennametal representative for details. Kennametal Inc., Latrobe, Pa.

HOW KENDEX* WORKS

1

Hard, strong, wear-resistant Kennametal is molded into square, round, or triangular Kendex inserts, which are precision ground.



2

Kendex inserts are mounted to suitable tool holders with socket head screws.



3

When edge becomes dull, insert is turned to new cutting position. When all cutting edges have been used, insert is thrown away; no regrinding.



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PRESIDENT

An important message to the metals industry

On December 1, 1953, Vanadium Corporation of America opened at Cambridge, Ohio, the initial building of its new Research Center.

The new Center is dedicated to just one end: to help you develop and produce ever better, ever more versatile metals through helping you find new, practical solutions to your most difficult technical problems.

To achieve that end, we have made the new Center what we believe to be one of the finest of its type anywhere in the metals industry.

We have made it a living symbol of the traditions, the achievements, the ultimate goals shared by Vanadium Corporation and the metals industry as a whole — as well as a new means to future service and prosperity for both.

We cordially invite you to visit our new Research Center next time you are in the vicinity.



President

Vanadium Corporation of America



March 25, 1954

If miniaturization is a problem BERYLLIUM COPPER MAY SOLVE IT



THE PROBLEM. Aware of the trend to smaller, lighter products, Edison engineers set out to create the V.P. Voicewriter—a personal dictating machine compact enough for carrying in a brief case, yet sturdy enough to match the performance of larger units. Several of the V.P.'s vital parts pre-

sented a serious problem of material selection. Besides meeting the over-all objective of space saving, these parts would be required to have a variety of special properties to facilitate assembly and to maintain Edison's high standards for service-free performance.



THE SOLUTION. Thanks to high strength, versatile Berylco beryllium copper, these critical components do a big job, take up little room in the production model of the V.P. Berylco provided every

required feature—both space and performance requirements—in more than adequate measure. And the V.P. was easier to assemble because several of the Berylco parts could be highly stressed without damage.

PERFORMANCE PLUS. Edison selected Berylco beryllium copper not for one valuable property, but many. Conductivity, hardness, stress resistance, wear resistance, nonmagnetic qualities, spring qualities, ability to be fixture heat treated without loss of elasticity—every one was important. In all these requirements Berylco delivers performance *plus*. That's why it has enabled manufacturers of such diverse things as bearings, precision switches, controls and machine tools to make smaller, lighter, more efficient products. Berylco can help you, too. For sample material or engineering assistance, write THE BERYLLIUM CORPORATION, Dept. 4C, Reading 6, Pa.

Tomorrow's products are planned today—with Berylco beryllium copper

—Technical Briefs—

Current is transmitted to clutch through a variable resistance . . .

A typical unit was tested in a laboratory, cycling ounce a minute for 1032 hours. Then, without disassembly, the unit was installed as a magnetically controlled cooling fan on a city delivery car.

After 9 months of operation (still performing perfectly), the device was removed for examination. Dynamometer tests revealed no change in performance characteristics, and all parts were found to be in perfect condition. No sign of wear or weakness of any kind was indicated.

Variable Resistance Used

Greatest interest is in the automotive main drive clutch. Its simplest application is in replacing the conventional pedal-operated friction clutch. The electromagnetic clutch, with the addition of a few controls, transforms the manual transmission into a semi-automatic.

Current is transmitted to the clutch through a variable resistance actuated by the accelerator. As the pedal is depressed, current to the clutch is increased sufficiently to pick up the load smoothly and positively. This makes it possible to start up in second or high without stalling the engine.

If stalling is threatened due to an overload in high gear starting, the clutch automatically compensates for the condition by easing off slightly until the car is under way. Then it becomes fully engaged.

Foundry:

Lower core box wear helps cut maintenance costs.

Elimination of excessive wear in core boxes has been possible with a recently developed method which utilizes low pressure prefill, it is reported.

Conventional methods of core blowing have always made use of

Technical Briefs

Attachment holds core box wear down . . . Maintenance considerably reduced . . .

high air pressure to deliver sand from magazine to core box.

The destructive blasting of sand under such pressures wore away areas of the core box opposite the blow holes and required constant maintenance work on core boxes. In cases where maintenance costs were prohibitive, it was often necessary to revert to hand-ramming cores.

Use Low Pressure First

Recently, the Federal Foundry Supply Co., Cleveland, introduced an attachment for its line of core blowers that holds core box wear to such a minimum that core box maintenance is practically negligible.

The low pressure prefill first fills the core box with sand under low pressure and then switches to full line pressure to pack the sand to correct hardness.

Sand Flows Readily

A prefill timer and air valve are provided for adjusting the system to the sand and box to be blown. When the box is in position and the blow button pressed, air from a low pressure line enters the air circuit to begin moving the sand into the core box.

Sand flows into the box and is distributed around sharp corners and into pockets without disturbing chills or wires, or wedging loose pieces. As soon as the box is filled, the timer opens the large blow valve and air and sand under full line pressure enter the box to pack the sand to correct hardness.

Time About Equal

Destructive blasting of sand is eliminated—holding wear to an absolute minimum and substantially reducing expensive core box maintenance. Low pressure prefilling requires little additional time over conventional blowing, so that cores are still produced in but a few seconds time.

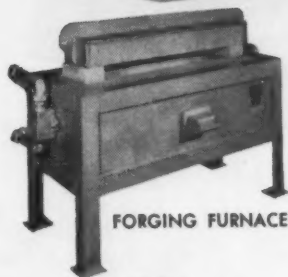
Turn Page

get the best out of your tool steel through

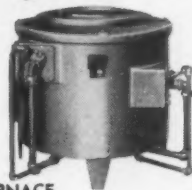
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The complete "Tool Dressing Package", entirely engineered by LOBDELL UNITED CO., (subsidiary of United Engineering and Foundry Co.) . . . includes all of the Forging, Heat Treating and Dressing Equipment . . . plus, the practical methods needed . . . and this "Package" not only reduces inventory costs, but it can do this at low initial cost, recoverable nominally in one year . . . without special metallurgical control.

The "versatile" NAZEL Electro-Pneumatic Forging Hammer is the LOBDELL UNITED CO. product . . . For the additional equipment presented within this "Package", LOBDELL is joined by a group of the most reputable leaders in their fields:

Heating Equipment by Eclipse Fuel Engineering Company

Tool Grinding Equipment by Black and Decker Company

Accessory Tools and Tool Steels by Bedford Tool and Forge Company



A copy of LOBDELL's new "Tool Dressing Package" Bulletin will give you further details.

LOBDELL UNITED COMPANY

WILMINGTON 99, DELAWARE

1836-1954

A SUBSIDIARY OF UNITED ENGINEERING AND FOUNDRY COMPANY

Alloy Castings:

Chrome-nickel alloys meet high temperature conditions.

Growing acceptance of chrome-nickel alloys of the heat resistant type have provided economy and efficiency in steel mill equipment subject to wide temperature variations.

Cast high alloy materials, the

H alloys of the Alloy Casting Institute, have successfully met requirements for a variety of temperature conditions.

Resist Corrosive Gases

To obtain the increased life necessary for economical and efficient operation, steel industry engineers are taking advantage of the properties of these cast chromium-nickel alloys. In heating sheet and plate, for example, design of con-

tinuous heating furnaces would be impossible without materials that could withstand high temperatures and temperature cycling, and resist the corrosive effects of gaseous products for long periods of time.

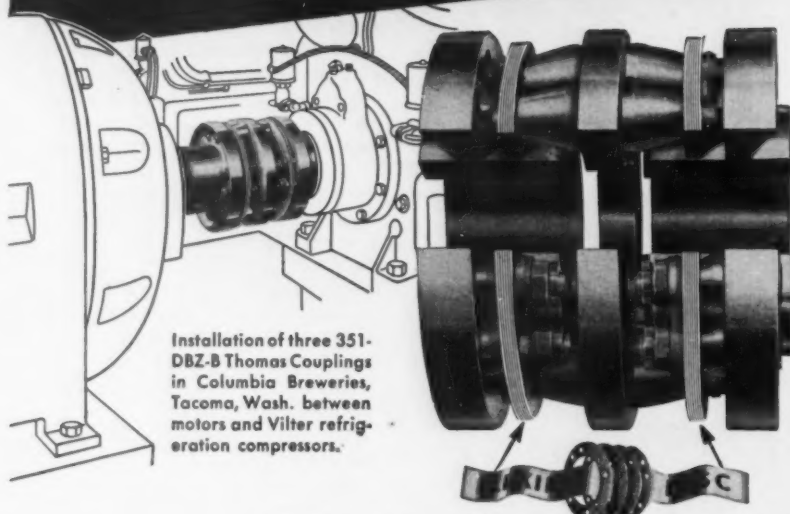
Almost any combination of temperature and atmosphere conditions can be satisfied through the choice of a proper alloy combined with proper design, furnace engineers and metallurgists have found.

Used In Soaking Pits

Soaking pits or reheating furnaces, which raise the temperature of steel ingots until they are sufficiently plastic for reduction by rolling or forging provide a typical example.

Normal range for heating ingots is between 2150° and 2450°F. Specific temperature varies with grade of steel, size of ingot and characteristics of the rolling mills. A series of pits, installed usually in rows, is placed in a building adjacent to the entering side of

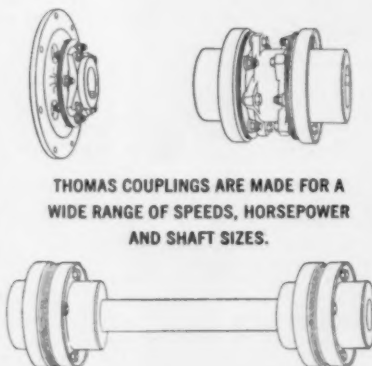
THOMAS FLEXIBLE COUPLINGS... for more years of better service!



Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

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PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



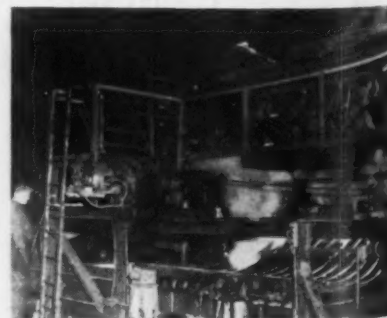
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THOMAS FLEXIBLE COUPLING COMPANY
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WARREN, PENNSYLVANIA, U.S.A.



HH CAST ALLOY seals on pit covers permitted substantial weight reduction at this Timken Roller Bearing Co. soaking pit. Service life was extended to 1 year.



SKID DISCHARGE rails cast of HT alloy have replaced rails made of manganese steel in this slab reheating furnace.

Technical Briefs

the blooming or slabbing mill to be served.

Protected By Seal

Ingots are placed upright in the soaking pit. A removable cover is used to close the pit opening. The modern soaking pit cover is constructed of a heavy steel frame which supports a suspended fire-brick arch.

The steel frame is protected on its under side by a cast high alloy angle type seal provided with a lip that penetrates into the sand seal. The sand seal, located on the periphery of the top of the pit, is a gutter-shaped space filled with sand.

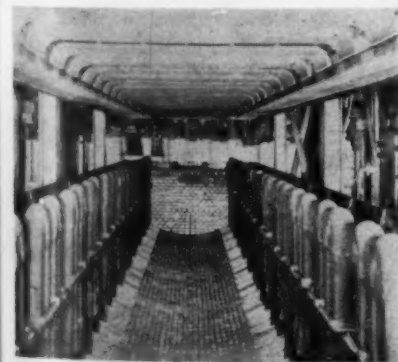
It is very important for this high alloy angle type seal to effect a perfect closure as it would not otherwise be possible to maintain the required furnace pressure necessary for correct furnace performance.

Has High Strength

Manufacturers of soaking pits, such as the Amsler Morton Corp.,



REDESIGN of wire-annealing "lead pan" to type HH alloy permitted weight reduction while lengthening service life.



RADIANT TUBE furnace for annealing and carbon restoration of bar stock uses type HT alloy for tubes and work supports.

Turn Page

Pittsburgh, use an angle type seal cast of the HH grade alloy. Containing 24 to 28 pct chromium and 11 to 14 pct nickel, this type has high strength, ductility and corrosion resistance at temperatures of 2000°F.

The HH grade can be produced as partially ferritic or wholly austenitic; the ferritic type providing higher hot ductility and

the austenitic higher hot strength. The particular HH composition chosen depends on the temperature of operation of the soaking pit—the temperature to which the soaking pit cover is exposed.

Application of high alloy castings to furnace dampers is another example of using modern materials to achieve improved efficiency in the steelmaking industry.

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DRYORTH is a fast, economical cleaner for

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Cowles also manufactures a complete line of cleaners engineered to handle all kinds of cleaning problems on both ferrous and non-ferrous metals. The Cowles Technical Man in your area will be glad to discuss any metal cleaning problems you have. Write us today!

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EF

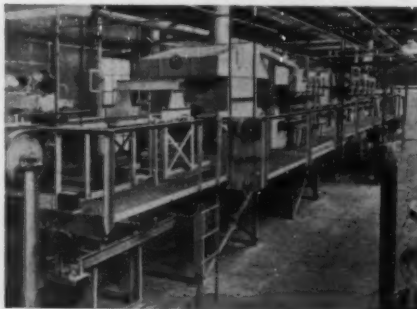
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General view of the research department showing several of the continuous and batch type experimental furnaces.



View of combination gas-fired and electric continuous furnace equipped with flame preheating burn-off or oxidizing section and controlled heating, soaking and cooling zones, for producing various surface conditions on strip.

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—Technical Briefs—

Cleaning:

Wet blasting speeds cleaning of furnace, press parts.

New methods of cleaning plant equipment parts can substantially cut maintenance by speeding the cleaning operation. Cleaning with air under pressure and abrasive materials, known as wet blasting, has proved effective in many plant cleaning operations.

Parts like oil burners for furnaces, and pistons, valves, and rods for plant engines need to be freed of carbonaceous scale, rust, and other surface contaminants to avoid plugging up. Similar contaminants must be dealt with on glass molds, die casting dies, plastics molds, and rubber molds.

Cuts Binder Films

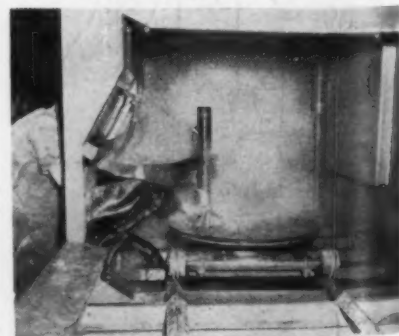
Punches and dies in presses used for ceramics and powdered metals become coated with films from binders and lubricants.

The cleaning problem is made more difficult because many of the parts are built to close tolerances. As a rule, manual and chemical methods have been used for this cleaning.

Cleans Rapidly

To decrease maintenance costs and speed processes up, many engineers have turned to the wet blasting process. This process consists of throwing water-suspended abrasives at the work by compressed air.

The method is particularly appropriate for cleaning parts with holes, pockets, and other recesses

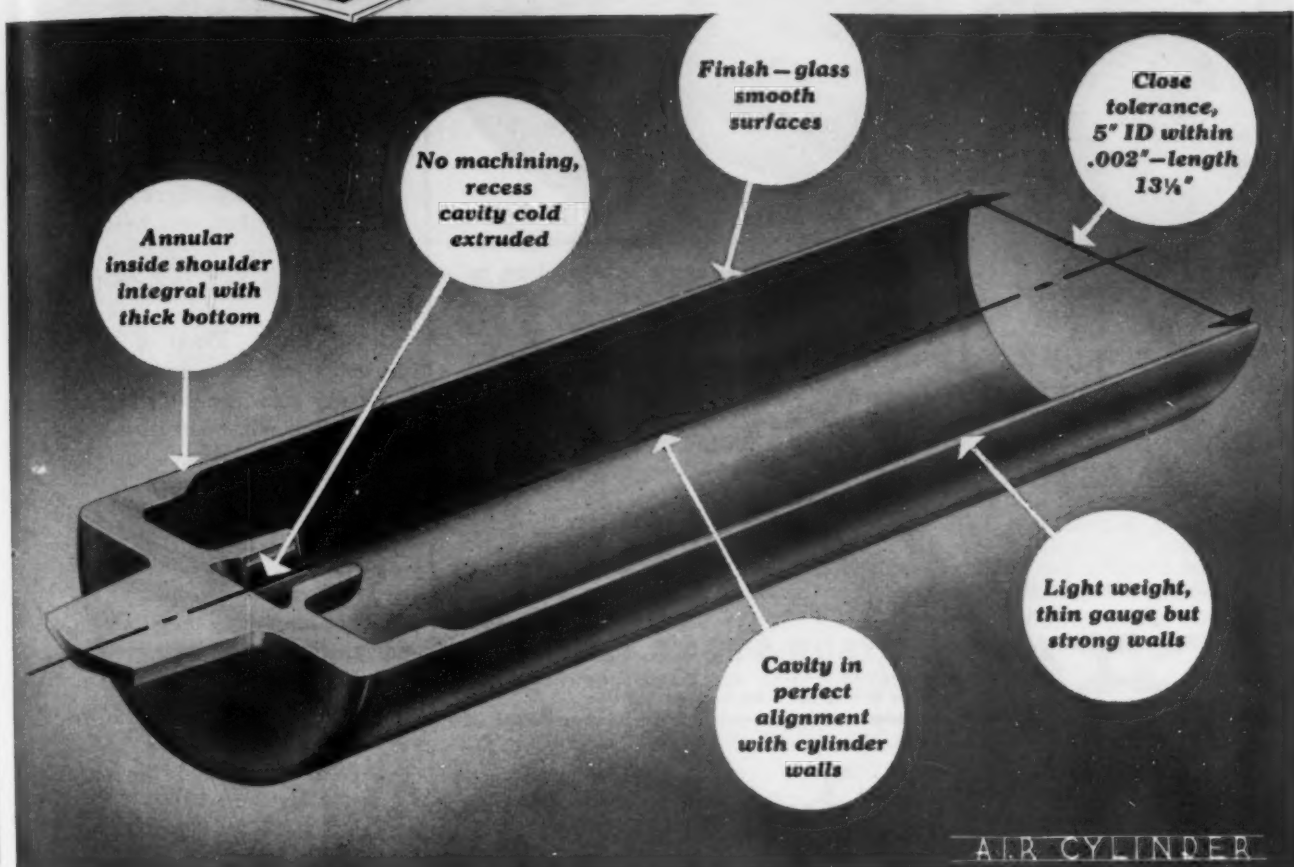


Clean with wet blast . . .

Turn Page



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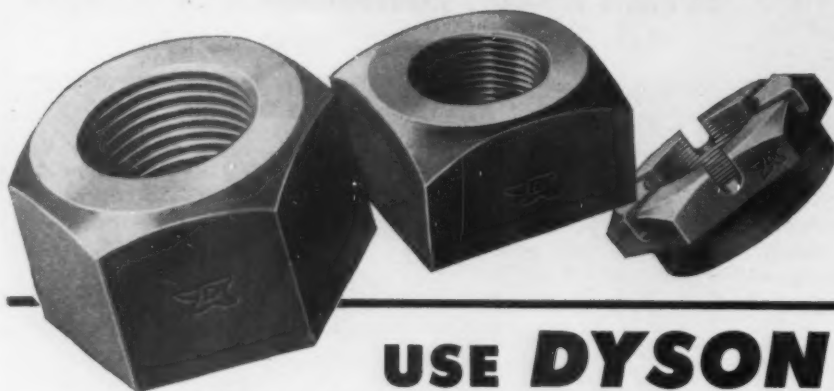
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March 25, 1954

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—Technical Briefs—

difficult to reach. Cleaning is rapid and all areas receive a uniform finish. Grinding lines, surface scratches and nicks are blended out.

Abrasion Controlled

Surface abrasion, however, is easily controlled, since such fine-mesh abrasives are used. Usual size for this application is 325 or 140 mesh. Sharp edges or corners, thin-walled sections, holes, or recesses remain undamaged. Dimensions can be held to 0.0001 in.

A typical experience is that reported by A. Finkl & Sons Co., Chicago, where a Liquamatte wet blasting machine manufactured by American Wheelabrator & Equipment Corp., Mishawaka, Indiana, is used.

Burner Parts Cleaned

Two typical reconditioning jobs at that company are oil burners for the furnaces in their die shop and oil burners for their boilers. The carbon-coated burners were formerly cleaned by manual scraping.

Each of these parts is now wet blasted in approximately 10 minutes with 140 mesh QZ Liquabrasive.

The Liquamatte used has three abrasive nozzles. Two of them are 1/2 in. abrasive nozzles with 7/32 in. air jets, for broad, flat areas. The other is a 1/4 in. abrasive nozzle with a 1/8 in. air jet for cleaning small, inaccessible areas, such as feed pipes, holes, etc., where a larger nozzle might create too much overblast.



... To cut down costs

THE IRON AGE SUMMARY...

- ◀ Ingot rate slips to 66.5 pct of rated capacity
- ◀ Near-term outlook for steel business darkens
- ◀ But scrap prices rise for first time this year

The near-term steel market outlook is discouraging to industry optimists who had predicted a first quarter upturn in business. This week an upturn seems more remote to steel people than it has for the past several weeks. Additional evidence only shows how badly some producers underestimated the size of customers' inventories—and their consequent depressing effect on steel buying.

But there are still a few bright spots shining through the gloom to keep alive hopes of a comeback in steel buying.

Scrap prices rose this week for the first time in 1954; prior to this week prices had declined every week this year. THE IRON AGE Steel Scrap Composite Price rose 84¢ this week to \$24.17 per gross ton.

Another favorable sign is improvement in wire demand. Some steel people feel that wire business tends to reflect future business for other steel products. Since wire was the first carbon steel product to turn soft last year, mills are hoping the current pickup in wire orders may be a signal for revival of demand for other products.

Some sales officials have sent their salesmen out for the specific purpose of establishing their market forecasts for April and May. Results are not encouraging.

There is no inclination on the part of buyers to boost their April schedules or even to hint that May will be better. Salesmen generally agree that buying intentions of their customers are based on minimum expectations. Steel buyers know, of course, that if business should pick up suddenly they will have no trouble booking what they need.

Central purchasing office of one of the big auto companies has established percentage allotments to govern placing of orders among its steel suppliers. Its buyers are expected to follow these arbitrary percentages very closely in placing business.

This has had the effect of sewing up the market among regular suppliers on a quota basis. Loudest complaints so far have come

from smaller steel companies, some of whom feel they are frozen out. But some of the bigger steel companies feel that they aren't being treated like cousins.

The stainless steel market, which showed signs of picking up a month ago, has taken another turn for the worse. This is demonstrated by employment figures.

A large stainless producer has laid off 850 more workers for at least 2 weeks, blaming the poor order situation. This brings to 2700 the number of workers laid off at this plant. Employment there is down to about 4100 compared with 6100 at the start of 1953 and 4800 at the end of 1953.

Promise of quick delivery is being used more and more as a sales tool. A steel salesman recently took an order for 350 tons of tube rounds with the understanding that he would arrange shipment in about 4 days. Otherwise, he wouldn't get the business. He made it by personally expediting the order, being fortunate enough to find open mill space.

Steelmaking operations this week are scheduled at 66.5 pct of rated capacity,

Steel Output, Operating Rates

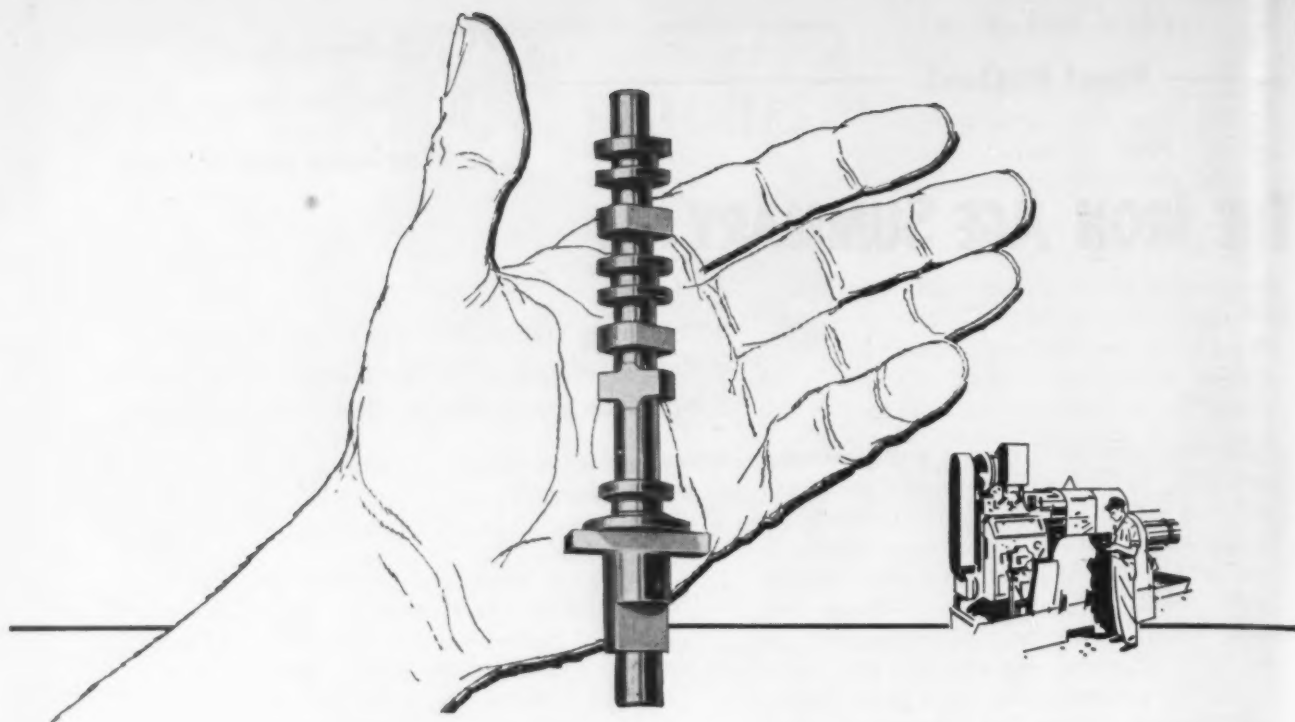
	This Week†	Last Week	Month Ago	Year Ago
Net Tons Produced (000 omitted)	1,585	1,613	1,756	2,324
Ingot Production Index (1947-49=100)	98.7	100.4	109.3	144.7
District Operating Rates				
Chicago	75.5	78.0	80.0	106.0
Pittsburgh	73.0	74.0	85.0	108.0
Philadelphia	62.5	65.0	72.0	94.0
Valley	50.0	61.0*	71.0	102.0
West	72.0	76.0*	77.5	110.5
Detroit	80.0	79.0*	67.0	107.0
Buffalo	69.5	69.5*	68.5	94.0
Cleveland	57.0	58.0*	70.0	94.0
Birmingham	78.0	78.5	80.0	98.5
S. Ohio River	70.0	76.0	79.0	88.0
Wheeling	75.0	83.0*	76.0	102.0
St. Louis	52.0	43.5	45.5	88.0
East	72.0	51.5*	73.0	96.0
Aggregate	66.5	68.0	73.5	100.5

Per cent of capacity for weeks in 1954 is based on annual capacity of 142,330,410 net tons as of Jan. 1, 1954. Per cent of capacity for last year is based on annual capacity of 117,547,470 tons as of Jan. 1, 1953.

* Revised.
† Tentative.

March 25, 1954

should be
124,330,410



MACHINABILITY CAN HELP YOU GET THE MOST OUT OF YOUR AUTOMATICS

● Are you getting the speeds and feeds you really could out of your automatics? Are you sure you couldn't produce more parts at lower unit cost?

The answer may be in the machinability of the steel you use. And that's why we at Union Drawn are so fussy about our steels.

Just to make sure that you get the most out of the Union Drawn Steels you buy from us, one of our metallurgists or machining engineers will be glad to work with your set-up man. They can

swap hints on tool angles, heavier speeds and feeds, and the best ways to run Union Drawn Steels in *your plant* on *your machines*.

The result? More parts in the pan, fewer in the reject box. Production is maintained or increased. So are profits.

Remember: the most important factor that influences unit parts costs is the *machinability* of the steel you use. And at Union Drawn, *machinability* is our prime concern. When may we tell you about it?

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GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

Free-Machining Bessemer
Alloy and Enduro Stainless Steels

Union Cold Drawn Special Sections

Union Cold Drawn and Ground Rounds;
Turned and Polished Rounds; and
Turned, Ground and Polished Rounds
(Union Precision Shafting)

REPUBLIC *Union*

COLD DRAWN STEELS



Markets at a Glance

New Export Prices . . . U. S. Steel Export Co. boosted galvanized pipe prices to cover higher zinc costs. Effective Mar. 11, the new discounts, including freight to eastern ports, are: standard pipe, threaded and coupled, butt-weld galvanized, 2½ and 3-in., 17.695 pct; 3½ and 4-in., 8.195 pct; seamless galvanized pipe, 2-in., plus 5.69 pct; 2½-in., plus 3.44 pct; 3-in., plus 0.94 pct; 3½-in. and 4-in., plus 0.56 pct; 5-in., plus 0.19 pct; 6-in., 2.31 pct.

Cut Price of Extras . . . U. S. Steel Corp. has reduced extras on certain grades of alloy bars, semi-finished, and strip and sheets \$2 per ton, to meet competition. Changes went into effect on Mar. 12. The company also eliminated restricted hardenability charges on selected grades of aircraft, gun and shell quality alloy steels. This extra was 10 pct of base price.

Win Rate Cut . . . Eastern railroads won permission from Interstate Commerce Commission to cut rates on iron and steel products an average 15 pct, effective Mar. 26. The roads are trying to lure back business lost to trucks. Under an agreement reached with ICC, the railroads agree to keep the lower rates in effect not longer than Dec. 31, 1955. ICC, meanwhile, will conduct its own study of rail-vs-truck competition in iron and steel traffic.

Selenium Shortage Acute . . . Both business and government are looking into ways and means of reclaiming selenium from old and discarded electronics equipment. Industry is concerned over shortages of high purity selenium and has asked the government to postpone plans for stockpiling.

Tests Plastic Dies . . . Kaiser Metal Products, Inc., currently furnishing 80 pct of sinks and bathtubs for Sears-Roebuck, is investigating use of low-cost Rezolin plastic dies. The plastic dies, cast from plaster, are considerably less expensive than the steel types.

Correction . . . Due to typographical error, cold finished bar extra revisions by Jones & Laughlin Steel Corp., (THE IRON AGE, Mar. 18, 1954, p. 169), referred to size range of "½-in. to less than 3/16-in.", but should have read, "½-in. to less than 13/16-in.". In the same paragraph, the next to last sentence should have read, "for flat bars, near squares, extras on two smaller sizes were increased \$3 per ton, and the balance remained about the same."

Close Two Furnaces . . . U. S. Steel Corp. shut down two additional open hearths in the Pittsburgh district last week. This brings to nine the number of furnaces banked in the last two weeks. Latest curtailment was at Homestead Works.

Stainless Steel For Italy . . . An agreement has been reached between Republic Steel Corp. and Fiat of Turin, Italy, under which the Italian firm will produce Republic's Enduro stainless and heat resisting steels in all grades at its plant in Turin for Italian distribution. Engineering and technical men from Republic will assist in laying out and installing the steelmaking facilities in Turin. The Enduro stainless steel made by Fiat will be sold exclusively by Cofermet, S.P.A. of Milan, Republic's present Italian distributor.

Inland Maps Expansion . . . Investment of \$35 million in new facilities is planned for 1954 by Inland Steel Co. according to the firm's annual report. This figure represents an \$11 million increase over 1953 capital expenditures. Biggest item on Inland's '54 program is the development of the company's Caland ore properties in Ontario, Canada.

Cuba To Aid Oil Drillers . . . Diplomatic sources have advised the U. S. Commerce Dept. that the Cuban government will match capital funds with any oil company drilling for oil in that country.

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	4.634	4.634	4.634	4.376
Pig Iron (gross ton)	\$56.59	\$56.59	\$56.59	\$55.26
Scrap, No. 1 hvy. (gross ton)	\$24.17	\$23.33	\$24.33	\$44.25
Nonferrous				
Aluminum, ingot	21.50	21.50	21.50	20.50
Copper, electrolytic	29.875	29.875	29.75	30.75
Lead, St. Louis	12.80	12.80	12.30	13.30
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin, Straits, N. Y.	95.00	92.50	85.00	\$1.21½
Zinc, E. St. Louis	9.75	9.75	9.75	11.00

Chile Threatens Iron Curtain Sale

Once again Chile says it will sell copper anywhere in the world . . . Most feel it's to strengthen Chile's position . . . Aim is to maintain production rate—By R. L. Hatschek.

The copper price bubble refuses to burst. And Chile refuses to allow any curtailment of production until it's proven that the copper can't be sold.

Official announcement that Chile would not permit Anaconda Copper Mining Co. and Kennecott Copper Corp. to trim their output as requested came last week in a communique from the Cabinet. As for Chile's proposed market study, one government official indicated that markets would be sought throughout the world including countries behind the Iron Curtain.

An Old Trick . . . This isn't the first time Chile has said it would sell to communist countries. And, as before, it may be taken as a prod to the U. S., an added "incentive" for this country to buy Chile's surplus to prevent its falling into Red hands.

Most observers discount the statement purely as a marketing lever. Chile's stocks now total about 180,000 tons—and monthly production is about 30,000 tons. By selling to Iron Curtain countries, Chile would strain its friendly relations with the U. S. and might lose a 100,000-ton sale thereby.

Production Off . . . February statistics of the Copper Institute

show lower crude and refined production both in the U. S. and foreign categories. But actual rates did not slip significantly, most of the reductions are accounted for by the shorter month.

Primary crude production in the U. S. was 69,370 tons as compared to 76,912 tons in January. Refined production slipped from January's 111,553 tons to 103,496 tons in this country. Foreign figures show primary crude output of 107,778 tons in February against 114,652 tons in the previous month and February refined production of 70,772 tons, down from 85,100 tons in January. This last figure is the only one to show a significant drop.

Deliveries Up . . . Deliveries to fabricators in the U. S. rose more than 10,000 tons above the January total to 87,384 tons in February. While this is a considerable improvement, it does not come up to earlier months when totals ran consistently over 100,000 tons. Outside the U. S., deliveries slipped—both total and daily average—to 76,001 tons for the period.

Stocks of refined copper held in the U. S. jumped 10,296 tons higher to 118,417 tons. Foreign held stocks dipped 5138 tons to 275,372.

Oppose Export Curbs . . . A proposal by the brass and bronze industry that short supply restrictions be reimposed on exports of copper scrap meets with unanimous opposition of scrap dealers and exporters. Representatives of the copper scrap industry say there is no shortage and that they need unlimited foreign markets because of decreasing demand from domestic ingot makers and custom smelters.

Meanwhile, ingot makers have had to jack up their scrap buying prices because of overseas competition. One ingot maker last week announced a new pricing policy on remelt ingot: Prices will be based on raw material costs. Immediate effect was that this firm boosted prices 1½¢ per lb on common alloys, more on high-tin alloys.

Other ingot makers did not follow the move and one leader in the field announced it had no intention of doing so in the near future.

Light Metal Notes . . . Primary aluminum production is sailing along steadily. In the short month of February, domestic output hit 110,483 tons as compared to the alltime high of 116,247 tons in January. What makes it really newsworthy is that the February rate actually tops January's on a daily average basis. New records will be established frequently during 1954.

Aluminum salesmen, meanwhile, report that the order tempo is beginning to pick up. But there's still plenty to be had.

Magnesium, too, is running steady—but at no record pace. January production of primary metal was 6446 tons as compared to 6467 tons in the preceding month. Wrought product shipments in January totaled 456 tons, almost identical with December's 459 tons. But these figures are way below the comparable 1953 statistics.

The Magnesium Assn., by the way, will hold its tenth annual meeting in St. Louis on Nov. 15-17.

NONFERROUS METAL PRICES

(Cents per lb except as noted)

	Mar. 17	Mar. 18	Mar. 19	Mar. 20	Mar. 22	Mar. 23
Copper, electro, Conn.	29.75-	29.75-	29.75-	29.75-	29.75-	29.75-
	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	92.50	93.75	95.00	....	95.00	95.00*
Zinc, East St. Louis	9.75	9.75	9.75	9.75	9.75	9.75
Lead, St. Louis	12.80	12.80	12.80	12.80	12.80	12.80

Note: Quotations are going prices

*Tentative

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marks with fluorescent lines the middle range of invisible defects. For many purposes "middle range" detection is sufficient.

NEW ZYGLO-PENTREX

also marks broad shallow defects and very tight cracks where "extreme range" detection is desirable.

Now, ZYGLO-PENTREX

A Super-Sensitive Fluorescent Penetrant
for *Extreme Range* Defect Detection

Zyglo-Pentrex is a new penetrant, specifically developed for the detection of extremely fine or shallow defects in parts whose application makes such defects critical.

Its first pilot use was in the important inspection of gas turbine buckets... then in high alloy diesel valves, extruded aluminum and heavy aluminum forgings.

Zyglo-Pentrex is the first *extreme range* penetrant. Its great advantage and unique characteristic is to widen the area of effective penetrant inspection at *both* extremes—to find *both* very tight

cracks and broad, shallow defects often missed by other penetrants. It also shows up *all* defects with more brilliant and easily seen indications.

Not all inspection requirements call for the extreme sensitivity of Zyglo-Pentrex. For many, inspection with standard Zyglo is sufficient. But, if you produce or work with non-magnetic parts in which defects even at the extreme ranges of detection can be critical, new Zyglo-Pentrex is effective beyond anything heretofore available. Fully automatic inspection, using regular Zyglo equipment can be provided. Write us now for full details.

Why ZYGLO-PENTREX is More Sensitive

Because Zyglo-Pentrex contains no emulsifier, it tends to have greater penetrating power. With "post emulsification," the emulsifier is applied after penetration of the part. Both emulsion time and washing can be controlled to suit the particular part or type of defect, to produce maximum visibility and brilliance of indications. Zyglo-Pentrex contains a much higher concentration of brighter fluorescent dyes. It also has greater dissolving powers, enabling it to penetrate into some types of contaminated cracks which would otherwise be impossible to find.

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Requirements For All Types Of Materials And
Sensitivity Needs. Write For Free Booklet
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Nonferrous Prices

(Effective Mar. 23, 1954)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.136 in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢; 0.081-in., 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢; 0.032-in., 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.

Plate, 1/4-in. and heavier: 2S-F, 3S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.5¢ to 82.8¢; 12 to 14, 37.2¢ to 99.0¢; 24 to 26, 39.9¢ to \$1.29; 36 to 38, 42.7¢ to \$1.39.

Rod, Rolled: 1.064 to 4.5-in., 2S-F, 3S-F, 43.8¢ to 37.2¢; cold-finished, 0.375 to 3.449-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, 1/2 to 11/32-in., 59.6¢ to 47.0¢; 3/4 to 1 1/4-in., 46.6¢ to 43.8¢; 1 1/8 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 32.4¢; 52S, 58.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

Extruded Tubing: Rounds, 63S-T5, OD 1 1/4 to 2-in., 31.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42¢ x 60 in., \$2.858; x 96 in., \$4.543; x 120 in., \$6.680; x 144 in., \$8.816. Coiled sheet, per lb, 0.019 in. x 28 in., 30.8¢.

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FSI-O 1/4 in., 66¢; 3/16 in., 57¢; 1/8 in., 60¢; 0.064 in., 73¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 1/2 to 1 in., 60.5¢; 1 1/4 to 1.749 in., 66¢; 2 1/2 to 5 in., 51.5¢. Other alloys higher. Base up to 1/4 in. diam, 10,000 lb; 1/2 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft, for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.5 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 25 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, 1/4 to 5/16 in., \$1.48; 5/16 to 3/4 in., \$1.29; 3/4 to 1 in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, 3/4 to 1 in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1 1/2 in., 10,000 lb; 1 1/2 to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$16; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel Monel	Inconel
Sheet, CR	86 1/2	67 1/2
Strip, CR	92 1/2	70 1/2
Rod, bar	82 1/2	65 1/2
Angles, HR	82 1/2	65 1/2
Plate, HR	84 1/2	66 1/2
Seamless Tube	115 1/2	100 1/2
Shot, blocks	60	60

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	46.41	44.73	48.48
Copper, h-r	48.38	44.73	48.48
Copper, drawn	46.98	44.73	48.48
Low brass	44.47	44.41	44.41
Yellow brass	41.72	41.66	41.66
Red brass	45.44	45.38	45.38
Naval brass	45.76	40.07	41.33
Lead brass	46.95	46.89	39.11
Com. bronze	49.48	43.62	45.18
Mang. bronze	66.58	67.08	67.08
Muntz metal	43.96	39.77	41.02
Ni silver, 10 pct	55.36	62.63	62.63

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	21.50
Aluminum pig	30.00
Antimony, American, Laredo, Tex.	28.50
Beryllium copper, per lb conta'd Be	\$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	\$72.75
Bismuth, ton lots	\$2.25
Cadmium, del'd	\$1.70
Cobalt, 97-99% (per lb)	\$2.60 to \$2.67
Copper, electro, Conn. Valley	29.75 to 30.00
Copper, Lake, delivered	30.00
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$165 to \$175
Lead, St. Louis	12.80
Lead, New York	13.00
Magnesium 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig	27.00
Ingot	27.75
Magnesium, sticks, 100 to 500 lb.	46.00 to 48.00
Mercury, dollars per 76-lb flask, f.o.b. New York	\$203 to \$207
Nickel electro, f.o.b. N. Y. warehouse	63.03
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.35
Palladium, dollars per troy oz.	\$21.00
Platinum, dollars per troy oz.	\$84 to \$87
Silver, New York, cents per oz.	85.25
Tin, New York	95.00
Titanium, sponge	\$5.00
Zinc, East St. Louis	9.75
Zinc, New York	10.25
Zirconium copper, 50 pct	\$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered carloads)

85-5-5-5 ingot	
No. 115	23.50
No. 120	22.75
No. 123	22.25
80-10-10 ingot	
No. 305	27.75
No. 315	25.50
88-10-2 ingot	
No. 210	36.50
No. 215	33.00
No. 245	28.50
Yellow ingot	
No. 405	19.75
Manganese bronze	
No. 421	24.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	22.50-23.00
0.60 copper, max.	22.00-22.50
Piston alloys (No. 122 type)	19.50-20.50
No. 12 alum. (No. 2 grade)	19.00-19.50
108 alloy	19.50-20.00
195 alloy	21.00-21.50
13 alloy (0.60 copper max.)	22.00-22.50
ASX-679	19.50-20.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—96-97 1/2%	20.25-21.00
Grade 2—92-95%	19.00-19.50
Grade 3—90-92%	18.00-18.50
Grade 4—85-90%	17.00-17.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	44.54
Electrodeposited	38.38
Flat rolled	47.14
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	84.00
Cadmium	\$1.75
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.	94 1/2

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63.90
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz. lots, per oz.	75 1/2
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	26 1/2
Yellow brass	19 1/2	24
Red brass	23	23 1/2
Comm. bronze	23 1/2	23 1/2
Mang. bronze	18 1/2	17 1/2
Yellow brass rod ends	19 1/2	

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	25 1/2-26
No. 2 copper wire	24-24 1/2
Light copper	22 1/2-23
* Refinery brass	21-21 1/2
* Dry copper content.	

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	25 1/2-26
No. 2 copper wire	24-24 1/2
Light copper	22 1/2-23
No. 1 composition	18 1/2-19
No. 1 comp. turnings	18-18 1/2
Roller brass	15-15 1/2
Brass pipe	16-16 1/2
Radiators	14 1/2-15

	Aluminum
Mixed old cast	11 1/2-13
Mixed new clips	12 1/2-13 1/2
Mixed turnings, dry	11 1/2-12 1/2
Pots and pans	11 1/2-13

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	23 1/2-24
No. 2 heavy copper and wire	21 1/2-22 1/2
Light copper	19 1/2-20
New type shell cuttings	18 1/2-19
Auto radiators (unsweated)	13-13 1/2
No. 1 composition	17-17 1/2
No. 1 composition turnings	16-17
Unlined red car boxes	14 1/2-15
Cocks and faucets	14 1/2-15
Mixed heavy yellow brass	11-11 1/2
Old rolled brass	13 1/2-14
Brass pipe	15 1/2-16
New soft brass clippings	16 1/2-17
Brass rod ends	14 1/2-15
No. 1 brass rod turnings	12-12 1/2

Aluminum

Alum. pistons and struts	5 1/2-6
Aluminum crankcases	8 1/2-9
2S aluminum clippings	11-11 1/2
Old sheet and utensils	8 1/2-9
Borings and turnings	5 1/2-6
Misc. cast aluminum	8 1/2-9
Dural clips (24S)	9-10

Zinc

New zinc clippings	5-5 1/2
Old zinc	3 1/2-4
Zinc routings	2-2 1/2
Old die cast scrap	2 1/2-3 1/2

Nickel and Monel

Pure nickel clippings	60-66
Clean nickel turnings	40
Nickel anodes	60-65
Nickel rod ends	60-65
New Monel clippings	22-24
Clean Monel turnings	14-15
Old sheet Monel	20-22
Nickel silver clippings, mixed	13
Nickel silver turnings, mixed	11

Lead

Soft, scrap, lead	9 1/2-10
Battery plates (dry)	5-5 1/2
Batteries, acid free	3 1/2

Magnesium

Segregated solids	20-21
Castings	19-20

Miscellaneous

Block tin	65-67
No. 1 pewter	40-48
No. 1 auto babbitt	37-38
Mixed common babbitt	11 1/2-12 1/2
Solder joints	14-14 1/2
Siphon tops	35
Small foundry type	14 1/2-14 3/4
Monotype	12 1/2-13
Lino. and stereotype	12-12 1/2
Electrotype	10 1/2-10 3/4
Hand picked type shells	7-7 1/2
Lino. and stereo. dross	4 1/2-4 3/4
Electro dross	3

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Some Prices Bounce Off "Rock Bottom"

Steelmaking grades rise in Chicago, Pittsburgh, Cleveland, and Valley . . . Iron Age composite price rises first time this year . . . Steelmaking outlook still dim.

Prices of steelmaking grades are higher this week in Chicago, Pittsburgh, Cleveland and Youngstown markets.

Increases caused THE IRON AGE Steel Scrap Composite price to rise 84¢ a ton to \$24.17 per gross ton. Prior to this week THE IRON AGE composite had fallen every week this year.

This week's price increases appear due more to a bounce off "rock bottom" than to any real strength in the market. Outlook for steel-making operations is, if anything, dimmer than it has been in recent weeks.

Meanwhile, both the Institute of Scrap Iron & Steel and the newly formed Federation of Independent Scrap Yard Dealers were adopting courses of action aimed at alleviating the economic plight of the scrap industry. Both groups adopted resolutions calling for government stockpiling of ingots made of dealers' scrap.

Pittsburgh—Strength in railroad scrap and small sales at higher prices in other grades forced an upward adjustment in the market this week. No. 1 railroad moved up \$2 per ton, and open hearth grades rose \$1 to \$2. Blast furnace scrap also was stronger on basis of crusher buying prices. Basically, the market continues weak. For the most part consumers are riding along on old orders.

Chicago—Scrap prices in Chicago shot up last week as three mills moved in to buy several steel mill grades. Brokers found at least one of these suddenly scarce at the dealer level. Most price movement was sympathetic, but was sufficient to bring up even asking prices for some No. 2 bundles, which have been a market drug for months. Two weeks ago a flurry like that of last week would have been forgotten within a few

days. This one seems to have left a considerable tide of optimism in its wake. Although strongest movement was in No. 2 heavy melting and No. 1 dealers' bundles, pricewise, nearly every grade on the list, with the exception of cast, has been affected.

Philadelphia—Slightly higher prices in a number of steelmaking centers bolstered optimism here this week, but a quick look at the still-declining ingot rate quickly sobered the trade. Prices up and down the list remain unchanged, but it's felt that any substantial buying would quickly lift quotations.

New York—No price changes are reported in this market this week. Consensus of the trade is that the bottom has been reached and the only direction prices can go is up. But the question is: When? Answer: As soon as the mills start buying.

Detroit—Scrap market continues on the critical list with no improvement or encouragement reported. Some bundles and electric furnace grades continue to be sold at current price levels. No turnings are moving, but local dealers have resisted offers at about \$1 less than quoted prices. Some hope has been raised because ingots and slabs have disappeared from mill yards and operating rates have gained slightly. Cast continues to hold its own.

Cleveland—Rock-bottom price fluctuations have resulted in sale of No. 1 heavy melting at \$26 the Valley. No. 2 grades remained stationary in the complete absence of demand. Prime openhearth grades also went up \$1 to \$22 in Cleveland in sympathy with the Valley sale. Dealers and brokers in this area feel no definite upward price trend is in sight as yet. Recent increase in heavy melting, they point out, was mainly caused by inability to cover existing orders at lower prices.

Birmingham—Scrap dealers in the South report sources of supply drying up, partly because farmers who are usually the biggest suppliers are busy with spring farm duties. Latest price cuts by mills also hurt. Brokers say some orders received the first of the month are still unfilled. Some dealers are still resisting the recent \$5 cut by mills, while others can supply only a carload or two. Demand for cast continues steady but supplies are small. Prices unchanged last week.

St. Louis—Renewed interest was shown in heavy railroad offerings during the week by steel mills in the St. Louis district. Random length rail brought an advance of \$4 a ton. Mill interest in the railroad material was believed due to a levelling off of inventories and the low movement of country scrap.

Cincinnati—Present price levels appear firm. Despite dealer opposition to March prices, mills intend to ride along on old price schedules for the rest of the month. Feeling is that April quotations will definitely be at higher levels. There is notable strength in some blast furnace items. Brokers are soliciting machine shop turnings at \$10 and short turnings at \$13, but dealers aren't willing to sell.

Buffalo—Continuance of brisk Canadian buying of cast at recently advanced prices is the feature of the market here. Cast tonnage is now difficult to find. But steelmaking and blast furnace grades continue to mark time. Dealers, however, are hopeful of new orders shortly.

Boston—Scrap prices remain unchanged this week in New England. Trading is very slow with only a trickle of the best No. 1 heavy melting moving to Providence. All other grades are dull and the trade is depressed and discouraged.

West Coast—Seattle prices dipped \$2 on Nos. 1 and 2 heavy melting as the Pacific Northwest market slowed. In California No. 2 heavy melting began moving in modest tonnage indicating mills are balancing inventory and not skimming off all No. 1 heavy melting available. Cast grades turning sluggish after recent good market.



Secrets of Success

(NO. 4 OF A SERIES)

The dimensions of Walter P. Chrysler's achievements are best measured in terms of the high stature earned by The Chrysler Corporation. The secret of that achievement seems best explained in these words from Mr. Chrysler's story of his own life:

"Years after I ceased to need them to earn a living, those tools I made...were placed on display in a glass case on the observatory floor, 71 stories up in the tower of the Chrysler Building. There, on a clear day, a visitor may look to a horizon nearly 40 miles away, and, by strolling around a corridor, see in one quick panorama hundreds of densely populated square miles of this great land. Yet, I am sure that one who neglects the view to gaze, with understanding, into that chest of tools I made, will have learned more about America than one who looks from an observatory window down into the uneven mass of steel, stone and brick that forms the city.

From: Life of an American Workman, Walter P. Chrysler; Used by permission of Dodd, Mead & Company, Publishers

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March 25, 1954

Scrap Prices

(Effective Mar. 23, 1954)

Pittsburgh

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	25.00 to 26.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and ms. turns	12.00 to 13.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Low phos. punch'gs, plate	28.00 to 29.00
Heavy turnings	23.00 to 24.00
No. 1 RR. hvy. melting	28.00 to 29.00
Scrap rails, random lgth.	37.00 to 38.00
Rails 2 ft and under	43.00 to 44.00
RR. steel wheels	33.00 to 34.00
RR. spring steel	33.00 to 34.00
RR. couplers and knuckles	33.00 to 34.00
No. 1 machinery cast.	41.00 to 42.00
Cupola cast.	35.00 to 36.00
Heavy breakable cast.	30.00 to 31.00
Malleable	28.00 to 29.00

Chicago

No. 1 hvy. melting	\$24.00 to \$26.00
No. 2 hvy. melting	22.00 to 24.00
No. 1 factory bundles	26.00 to 28.00
No. 1 dealers' bundles	26.00 to 27.00
No. 2 dealers' bundles	17.00 to 19.00
Machine shop turn.	9.50 to 10.00
Mixed bor. and turn.	9.50 to 10.00
Shoveling turnings	11.50 to 12.00
Cast iron borings	11.50 to 12.00
Low phos. forge crops	33.00 to 34.00
Low phos. punch'gs, plate	29.00 to 31.00
Low phos. 3 ft and under	28.00 to 29.00
No. 1 RR. hvy. melting	28.00 to 30.50
Scrap rails, random lgth.	30.00 to 31.00
Rerolling rails	35.00 to 37.00
Rails 2 ft and under	39.00 to 40.00
Locomotive tires, cut	31.00 to 33.00
Cut bolsters & side frames	32.00 to 34.00
Angles and splice bars	34.00 to 35.00
RR. steel car axles	36.00 to 38.00
RR. couplers and knuckles	32.00 to 33.00
No. 1 machinery cast.	36.00 to 37.00
Cupola cast.	33.00 to 34.00
Heavy breakable cast.	27.00 to 28.00
Cast iron brake shoes	35.00 to 36.00
Cast iron car wheels	31.00 to 33.00
Malleable	38.00 to 39.00
Stove plate	26.00 to 28.00

Philadelphia Area

No. 1 hvy. melting	\$21.00 to \$23.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 bundles	21.00 to 23.00
No. 2 bundles	16.00 to 18.00
Machine shop turn.	10.00 to 11.00
Mixed bor. short turn.	10.00 to 11.00
Cast iron borings	10.00 to 11.00
Shoveling turnings	15.00 to 16.00
Clean cast chem. borings	24.00 to 25.00
Low phos. 5 ft and under	24.00 to 26.00
Low phos. 2 ft and under	25.00 to 27.00
Low phos. punch'gs	25.00 to 27.00
Elec. furnace bundles	22.00 to 24.00
Heavy turnings	20.00 to 21.00
RR. steel wheels	29.00 to 30.00
RR. spring steel	29.00 to 30.00
Rails 18 in. and under	39.00 to 40.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	35.00 to 37.00
Cast iron car wheels	38.00 to 39.00
Malleable	38.00 to 39.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	38.00 to 39.00
Charging box cast.	35.00 to 36.00

Cleveland

No. 1 hvy. melting	\$21.00 to \$22.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles	21.00 to 22.00
No. 2 bundles	15.00 to 16.00
No. 1 busheling	20.00 to 21.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	13.00 to 14.00
Cut struct'l plate, 2 ft & under	30.00 to 31.00
Drop forge flashings	21.00 to 22.00
No. 1 RR. heavy melting	26.00 to 27.00
Rails 3 ft and under	43.00 to 44.00
Rails 18 in. and under	44.00 to 45.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	19.00 to 20.00
Railroad cast.	39.00 to 40.00
No. 1 machinery cast.	40.00 to 41.00
Stove plate	33.00 to 34.00
Malleable	39.00 to 40.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 bundles	25.00 to 26.00
No. 2 bundles	18.00 to 19.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	13.00 to 14.00
Low phos. plate	27.00 to 28.00

Buffalo

No. 1 hvy. melting	\$22.00 to \$23.00
No. 2 hvy. melting	18.50 to 19.50
No. 1 busheling	22.00 to 23.00
No. 1 bundles	22.00 to 23.00
No. 2 bundles	16.50 to 17.50
Machine shop turn.	11.50 to 12.50
Mixed bor. and turn.	13.50 to 14.50
Shoveling turnings	15.50 to 16.50
Cast iron borings	13.50 to 14.50
Low phos. plate	27.00 to 28.00
Scrap rails, random, lgth.	32.00 to 33.00
Rails 2 ft and under	39.00 to 40.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast.	37.00 to 38.00
No. 1 cupola cast.	33.00 to 34.00

Detroit

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$15.00 to \$16.00
No. 2 hvy. melting	14.00 to 15.00
No. 1 bundles, openhearth	16.00 to 17.00
No. 2 bundles	14.00 to 15.00
New busheling	15.00 to 16.00
Drop forge flashings	15.00 to 16.00
Machine shop turn.	4.50 to 5.50
Mixed bor. and turn.	6.50 to 7.50
Shoveling turnings	6.50 to 7.50
Cast iron borings	6.50 to 7.50
Low phos. punch'gs, plate	16.00 to 17.00
No. 1 cupola cast.	35.00
Heavy breakable cast.	24.00
Stove plate	28.00
Automotive cast.	35.00

St. Louis

No. 1 hvy. melting	\$24.00 to \$25.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	8.00 to 9.00
Cast iron borings	9.50 to 10.50
Shoveling turnings	9.50 to 10.50
No. 1 RR. hvy. melting	29.00 to 30.00
Rails, random lengths	34.00 to 35.00
Rails, 18 in. and under	37.00 to 39.00
Locomotive tires, uncut	29.00 to 30.00
Angles and splice bars	31.00 to 32.00
Std. steel car axles	35.00 to 36.00
RR. spring steel	31.50 to 32.50
Cupola cast.	38.00 to 39.00
Hvy. breakable cast.	23.00 to 24.00
Cast iron brake shoes	30.00 to 31.00
Stove plate	31.00 to 32.00
Cast iron car wheels	30.00 to 31.00
Malleable	34.00 to 35.00
Unstripped motor blocks	23.00 to 24.00

New York

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$13.00 to \$14.00
No. 2 hvy. melting	11.00 to 12.00
No. 2 bundles	9.00 to 10.00
Machine shop turn.	4.00 to 5.00
Mixed bor. and turn.	6.00 to 7.00
Shoveling turnings	7.00 to 8.00
Clean cast chem. borings	18.00 to 19.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	29.00 to 30.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	20.00
No. 2 bundles	\$15.00 to 16.00
No. 1 busheling	20.00
Machine shop turn.	13.00
Shoveling turnings	15.00
Cast iron borings	13.00 to 14.00
Electric furnace bundles	25.00 to 26.00
Bar crops and plate	28.00 to 29.00
Structural and plate, 3 ft.	28.00 to 29.00
No. 1 RR. hvy. melting	23.00 to 24.00
Scrap rails, random lgth.	32.00 to 34.00
Rails, 18 in. and under	37.00 to 38.00
Angles & splice bars	35.00 to 36.00
Rerolling rails	32.00 to 33.00
No. 1 cupola cast.	40.00 to 41.00
Stove plate	37.00 to 38.00
Cast iron car wheels	33.00 to 34.00
Charging box cast.	23.00 to 24.00
Heavy breakable	24.00 to 25.00
Unstripped motor blocks	31.00 to 32.00
Mashed tin cans	14.00 to 15.00

Boston

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$13.00 to \$16.00
No. 2 hvy. melting	9.00 to 11.00
No. 1 bundles	12.00 to 14.00
No. 2 bundles	7.00 to 9.00
No. 1 busheling	11.00 to 13.00
Elec. furnace, 3 ft & under	13.00 to 16.00
Machine shop turn.	1.00 to 1.50
Mixed bor. and short turn.	6.00 to 7.00
Shoveling turnings	7.00 to 7.25
Clean cast chem. borings	13.00 to 14.00
No. 1 machinery cast.	27.00 to 28.00
Mixed cupola cast.	23.00 to 24.00
Heavy breakable cast.	25.50 to 26.00
Stove plate	29.00 to 31.00
Unstripped motor blocks	7.00 to 8.00

Cincinnati

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$22.00 to \$23.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 bundles	22.00 to 23.00
No. 2 bundles	16.00 to 17.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Cast iron borings	10.00 to 11.00
Low phos., 18 in. & under	29.00 to 30.00
Rails, random lengths	34.00 to 35.00
Rails, 18 in. and under	42.00 to 43.00
No. 1 cupola cast.	34.00 to 35.00
Hvy. breakable cast.	29.00 to 30.00
Drop broken cast.	40.00 to 41.00

San Francisco

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Cast iron borings	9.00
No. 1 RR. hvy. melting	38.00
No. 1 cupola cast.	\$39.00 to 40.00

Los Angeles

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Shoveling turnings	\$7.00 to 9.00
Cast iron borings	7.00 to 9.00
Elec. fur. 1 ft and under	25.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	\$7.00 to 38.00

Seattle

No. 1 hvy. melting	\$23.00
No. 2 hvy. melting	19.00
No. 1 bundles	22.00
No. 2 bundles	16.00
No. 3 bundles	12.00
No. 1 cupola cast.	37.00
Mixed yard cast.	35.00

Hamilton, Ont.

No. 1 hvy. melting	\$23.00
No. 2 hvy. melting	21.00
No. 1 bundles	23.00
No. 2 bundles	19.00
Mixed steel scrap	18.00
Bushelings	19.00
Bush., new fact prep'd.	22.00
Bush., new fact unprep'd.	18.00
Short steel turnings	13.00
Mixed bor. and turn.	13.00
Rails, remelting	33.00
Cast scrap	40.00

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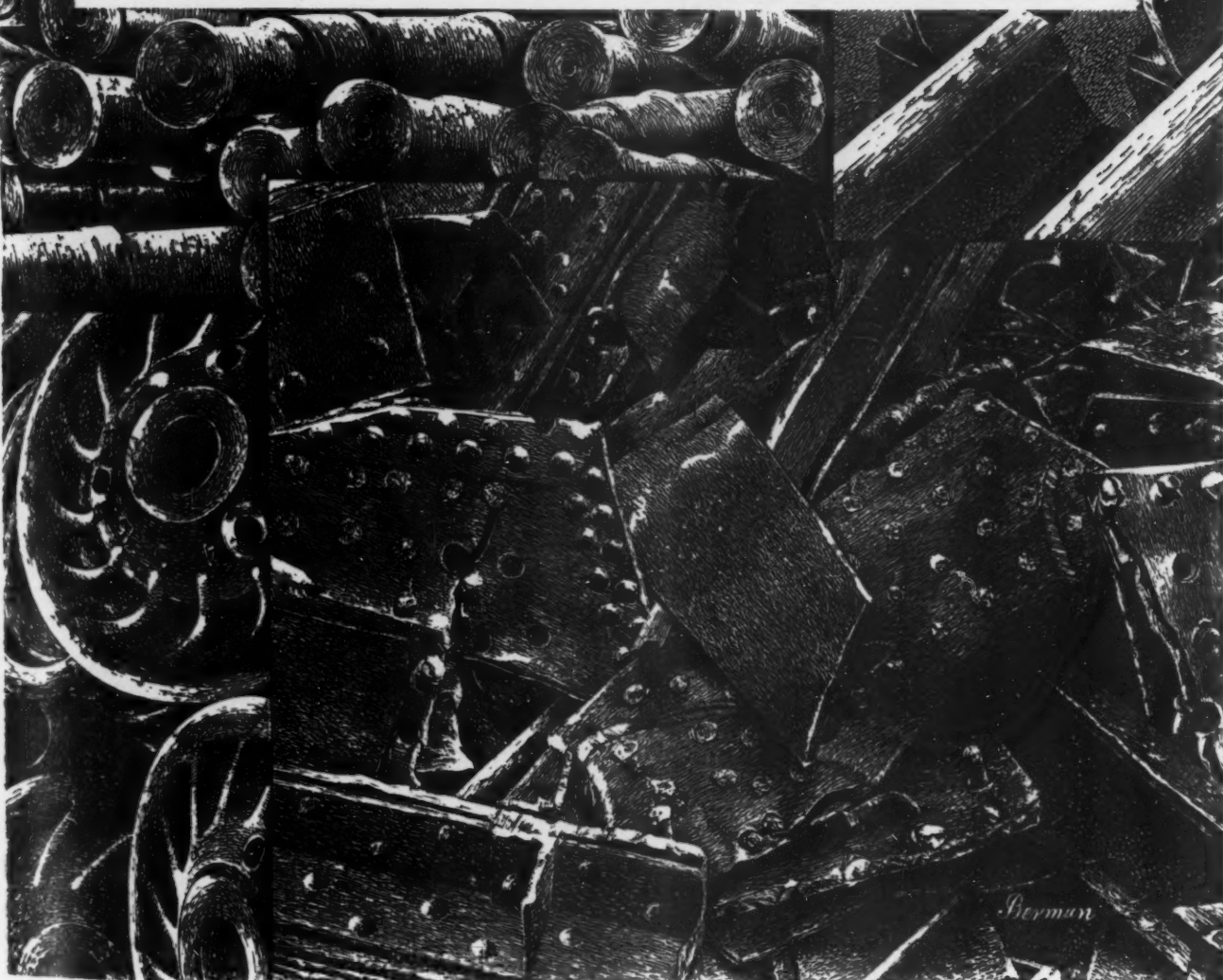
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LEADERS IN IRON AND STEEL SCRAP SINCE 1889



Comparison of Prices

(Effective Mar. 23, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Mar. 23 1954	Mar. 16 1954	Feb. 23 1954	Mar. 24 1953
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.925¢	3.925¢	3.925¢	3.775¢
Cold-rolled sheets	4.775	4.775	4.775	4.675
Galvanized sheets (10 ga.)	5.275	5.275	5.275	5.075
Hot-rolled strip	3.925	3.925	3.925	3.725
Cold-rolled strip	5.513	5.513	5.513	5.20
Plate	4.10	4.10	4.10	3.90
Plates wrought iron	9.30	9.30	9.30	9.00
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	38.48
Fin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. terms	7.75	7.75	7.75	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.16¢	4.16¢	4.16¢	3.96¢
Cold finished bars	5.20	5.20	5.20	4.925
Alloy bars	4.875	4.875	4.875	4.675
Structural shapes	4.10	4.10	4.10	3.85
Stainless bars (No. 302)	35.50	35.50	35.50	32.95
Wrought iron bars	10.40	10.40	10.40	10.05
Wire: (per pound)				
Bright wire	5.525¢	5.525¢	5.525¢	5.225¢
Rails: (per 100 lb.)				
Heavy rails	\$4.325	\$4.325	\$4.325	\$3.775
Light rails	5.20	5.20	5.20	4.25
Semifinished Steel: (per net ton)				
Re-rolling billets	\$62.00	\$62.00	\$62.00	\$59.00
Slabs, re-rolling	62.00	62.00	62.00	59.00
Forging billets	75.50	75.50	75.50	70.50
Alloy blooms, billets, slabs	82.00	82.00	82.00	76.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.525¢	4.525¢	4.525¢	4.325¢
Skelp	3.75	3.75	3.75	3.55
Finished Steel Composite: (per pound)				
Base price	4.634¢	4.634¢	4.634¢	4.376¢

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	Mar. 23 1954	Mar. 16 1954	Feb. 23 1954	Mar. 24 1953
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$61.19	\$61.19	\$61.19	\$60.89
Foundry, Valley	56.50	56.50	56.50	55.95
Foundry, Southern, Cin'ti	60.43	60.43	60.43	58.98
Foundry, Birmingham	52.88	52.88	52.88	51.38
Foundry, Chicago	56.50	56.50	56.50	55.00
Basic del'd, Philadelphia	60.27	60.27	60.27	59.77
Basic, Valley furnace	56.00	56.00	56.00	54.50
Malleable, Chicago	56.50	56.50	56.50	55.00
Malleable, Valley	56.50	56.50	56.50	55.04
Ferromanganese, cents per lb.	10.00¢	10.00¢	10.00¢	8.04¢
‡ 76 pct Mn base.				
Pig Iron Composite: (per gross ton)				
Pig iron	\$56.50	\$56.50	\$56.50	\$55.25
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$25.50	\$24.50	\$24.50	\$44.75
No. 1 steel, Phila. area	22.00	22.00	23.50	44.50
No. 1 steel, Chicago	25.00	23.50	25.00	43.50
No. 1 bundles, Detroit	16.50	16.50	19.00	40.50
Low phos., Youngstown	27.50	26.50	27.50	49.50
No. 1 mach'y cast, Pittsburgh	41.50	41.50	41.50	62.50
No. 1 mach'y cast, Philadel'a.	38.50	38.50	39.00	49.00
No. 1 mach'y cast, Chicago	36.50	37.00	34.00	47.00
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	\$24.17	\$23.33	\$24.33	\$44.25
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$14.38	\$14.38	\$14.38	\$14.75
Foundry coke, prompt	17.25	17.25	17.25	17.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.875¢	29.875¢	29.75¢	30.75¢
Copper, Lake, Conn.	30.00	30.00	30.00	32.125
Tin, Straits, New York	95.00†	92.50	85.00	\$121¼
Zinc, East St. Louis	9.75	9.75	9.25	11.00
Lead, St. Louis	12.80	12.80	12.30	13.30
Aluminum, virgin ingot	21.50	21.50	21.50	20.50
Nickel, electrolytic	63.08	63.08	63.08	63.08
Magnesium, ingot	27.75	27.75	27.75	27.00
Antimony, Laredo, Tex.	28.50	25.50	28.50	34.50

† Tentative. ‡ Average. * Revised.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

← To identify producers, see Key on p. 181 →

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem B3	58.00	58.50	59.00	59.50	
Birmingham R3	52.38	52.88			
Birmingham W9	52.38	52.88			
Birmingham S5	52.38	52.88			
Buffalo R3	56.00	56.50	57.00		
Buffalo H1	56.00	56.50	57.00		
Buffalo W6	56.00	56.50	57.00		
Chicago I4	56.00	56.50	56.50	57.00	
Cleveland A5	56.00	56.50	56.50	57.00	61.00
Cleveland R3	56.00	56.50	56.50		
Duquesne L3	52.50	52.50	52.50		
Duluth I4	56.00	56.50	56.50	57.00	
Erie I4	56.00	56.50	56.50	57.00	
Everett M6	63.00	63.50			
Fontana K1	62.00	62.50			
Geneva, Utah C7	56.00	56.50			
Granite City G2	57.90	58.40	58.90		
Hubbard Y1			56.50		
Minnequa C6	58.00	59.00	59.00		
Monessen P6	56.00				
Neville I4 P4	56.00	56.50	56.50		
Pittsburgh U1	56.00			57.00	
Sharpsville S3	56.00	56.50	56.50	57.00	
Steelton B3	58.00	58.50	59.00	59.50	64.00
Swedeland A2	58.00	58.50	59.00	59.50	
Toledo I4	56.00	56.50	56.50	57.00	
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00
Youngstown Y1			56.50	57.00	
N. Tonawanda T1		56.50	57.00		

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct., \$2 per ton for .05 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, H1, \$68.25; Jackson, J1, G1 \$67.00. Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct. or more phosphorus. Add 75¢ for each 0.50 pct. manganese over 1.0 pct. Bessemer ferrosilicon prices are \$1 over comparable silvery iron.

STAINLESS STEEL

Base price cents per lb., f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingot, re-rolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00		14.25
Slabs, billets, re-rolling	29.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25		18.50
Forg. discs, die blocks, rings	29.75	33.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	58.75	45.75	51.25	30.00	30.50	30.50
Sheets	46.25	46.50	48.75	48.75	64.50	55.50	60.75	40.75	41.25	43.50
Strip, hot-rolled	29.75	32.00	36.75	34.25	55.00	42.00	46.50	26.25		27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	66.50	54.50	59.25	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2, J2; Baltimore, El; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, J4; Lockport, N. Y., R4.

Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, C5; Lockport, N. Y., S4; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (.25¢ per lb higher) W1 (.25¢ per lb higher); New Bedford, Mass., R6.

Bars: Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Lockport, N. Y., S4; Canton, O., T5; Ft. Wayne, I4.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11.

Plates: Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Lockport, N. Y., S4; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15.

Forged discs, die blocks, rings: Pittsburgh, C11; Syracuse, C11; Ferndale, Mich., A3; Washington, Pa., J2.

Forging billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.

WHEELING'S

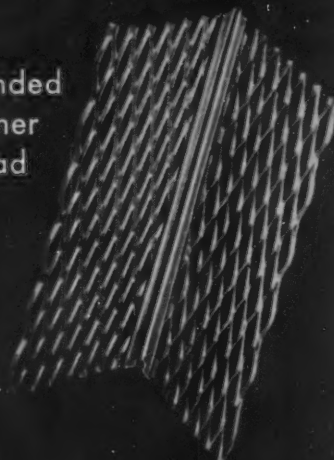


Conductor
Pipe



Flat Apron
Corner Bead

Expanded
Corner
Bead



NEW

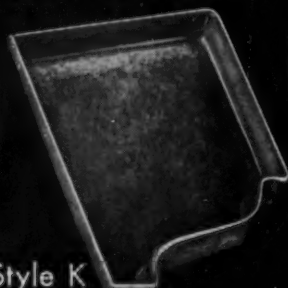


Coal Hod Bottom

SOFTITE

TRADE MARK

**GALVANIZED SHEETS
PERMIT ALL THIS (AND MORE)
WITH NO CHIPPING OR
FLAKING OF COATING!**



Style K
End Cap



Oil Can
Spout

● The reason for the remarkable workability of Wheeling SofTite is that it is ductile and tight coated to a most amazing degree. As a result, it forms freely and easily, with no strains in the zinc coating, no chipping or flaking of coating.

This versatile combination of a soft, ductile steel base and an incomparably tight zinc coating represents a signal achievement in sheet steel metallurgy. For not only is it manufactured by a new and

revolutionary process* perfected by Wheeling engineers, but it also achieves the long-sought qualities and characteristics unobtainable in the past.

Users of Wheeling SofTite Galvanized Sheets have acclaimed them the ultimate in continuously coated galvanized sheets.

Working sample available. Call or write nearest warehouse or office. Wheeling Steel Corporation, Wheeling, West Virginia.

*Covered by U. S. Patent No. 2,647,305



IT'S WHEELING STEEL!

March 25, 1954

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

**STEEL
PRICES**(Effective
Mar. 23, 1954)

	BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.		\$82.00 B3		4.15 B3	6.20 B3	4.15 B3						
	Buffalo, N. Y.	\$62.00 B3	\$75.50 B3, R3	\$82.00 B3, R3	4.925 B3	4.15 B3	6.20 B3	4.15 B3	3.925 B3, R3	5.45 B3	6.00 B3	8.425 B3	
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.							4.05 A2		5.90 A2			
	New Bedford, Mass.								6.00 R6				
	Harrison, N. J.												12.00 C11
	Johnstown, Pa.	\$62.00 B3	\$75.50 B3	\$82.00 B3		4.15 B3	6.20 B3						
	Morrisville, Pa.												
	New Haven, Conn.								5.90 D1 6.20 A5				
	Phoenixville, Pa.				4.15 P2		4.95 P2						
	Sparrows Pt., Md.							3.925 B3	5.45 B3	6.00 B3	8.425 B3		
	Wallingford, Conn.								5.90 W1				
	Worcester, Mass.								6.30 A5				12.30 A5 12.45 A7
MIDDLE WEST	Alton, Ill.							4.10 L1					
	Ashland, Ky.							3.925 A7					
	Canton-Massillon, Dover, Ohio			\$82.00 R3, T3									12.00 G4
	Chicago, Ill.	\$62.00 U1	\$75.50 R3, U1, W8	\$82.00 U1, W8, R3	4.925 U1	4.10 U1, W8	6.175 U1, Y1	4.10 U1	3.925 A1, W8	5.70 A1	5.95 R3	6.40 W8	
	Sterling, Ill.												
	Cleveland, Ohio		\$75.50 R3							5.45 A5, J3	7.80 J3 8.15 A5		12.00 A5 12.15 A7
	Detroit, Mich.			\$84.00 R5				4.125 G3 4.15 M2	5.65 D1, D2, G3, M2, P11	6.15 G3	7.90 D2 8.35 G3		
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana	\$62.00 U1	\$75.50 U1	\$82.00 U1, Y1	4.925 J3	4.10 J3, U1	6.175 U1, J3	3.925 J3, U1, Y1	5.70 J3	5.95 U1, J3 6.45 Y1		6.40 U1	
	Granite City, Ill.												
	Indianapolis, Ind.								5.60 C5				
	Mansfield, Ohio												
	Middletown, Ohio								5.45 A7				
	Niles, Warren, Ohio Sharon, Pa.							3.925 S1	5.45 S1, T4	5.95 S1	7.65 S1	6.40 S1	12.00 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$62.00 U1, J3	\$75.50 J3, U1	\$82.00 U1, C11	4.925 U1	4.10 J3, U1	6.175 J3, U1	4.10 U1	3.925 A7, P6 3.95 S7 4.425 S9	5.45 B4, J3, S7	7.80 J3	6.40 S9 6.45 S7	12.00 S9 12.15 S7
	Portsmouth, Ohio							3.925 P7					
	Weirton, Wheeling, Follansbee, W. Va.					4.10 W3		3.925 W3	5.45 F3, W3	5.95 W3	8.15 W3		
	Youngstown, Ohio			\$82.00 Y1, C10		4.10 Y1	6.675 Y1	3.925 R3, U1, Y1	5.45 R3, Y1, C5	5.95 U1, R3 6.45 Y1	7.60 R3 8.30 Y1	6.40 U1	12.00 C5
WEST	Fontana, Cal.	\$70.00 K1	\$83.50 K1	\$101.00 K1		4.75 K1	6.825 K1	5.10 K1	4.70 K1	7.35 K1	7.05 K1	7.00 K1	13.65 K1
	Genova, Utah		\$75.50 C7			4.10 C7	6.175 C7						
	Kansas City, Mo.					4.70 S2	6.775 S2		4.525 S2		6.55 S2	7.00 S2	
	Los Angeles, Torrance, Cal.		\$85.00 B2	\$102.00 B2		4.80 B2, C7	6.85 B2		4.675 B2, C7	7.50 C1		7.60 B2	
	Minneapolis, Colo.					4.55 C6			5.025 C6				
	San Francisco, Niles, Pittsburg, Cal.		\$85.00 B2			4.75 B2 4.91 P9	6.80 B2		4.675 B2, C7				
	Seattle, Wash.		\$89.00 B2, S11			4.85 B2	6.90 B2						
	Atlanta, Ga.								4.125 A8				
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$62.00 T2	\$75.50 T2			4.10 R3, T2	6.175 T2		3.925 R3, T2, C16		5.95 T2		
	Houston, Tex.		\$83.50 S2	\$90.00 S2		4.50 S2			4.425 S2			6.80 S2	

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

(Effective Mar. 23, 1954)

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
Hot-rolled 10 ga. & heavy.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Tern 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.	
3.925 B3	4.775 B3				5.90 B3	7.225 B3			4.525 W6				Bethlehem, Pa.
													Buffalo, N. Y.
										† Special coated mil. terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct \$2.20 from 1.25-lb coke base box. * COKE: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢.			Claymont, Del.
4.05 A2					5.90 A2								Coatesville, Pa.
													Conschocken, Pa.
													Harrisburg, Pa.
									4.525 B3				Hartford, Conn.
4.025 U1	4.875 U1									\$8.80 U1	\$7.50 U1		Johnstown, Pa.
													Morrisville, Pa.
													New Haven, Conn.
													Phoenixville, Pa.
3.925 B3	4.775 B3	5.275 B3			5.90 B3	7.225 B3	8.075 B3		4.625 B3	\$8.80 B3	\$7.50 B3		Sparrows Pt., Md.
									4.825 A5				Worcester, Mass.
													Trenton, N. J.
									4.70 L1				Alton, Ill.
3.925 A7		5.275 A7	5.175 A7										Ashland, Ky.
		5.275 R1, R3						5.05 R1					Canton-Massillon, Dover, Ohio
3.925 A1, W8					5.90 U1				4.525 A5, N4,R3				Chicago, Joliet, Ill.
									4.625 N4				Sterling, Ill.
3.925 J3, R3	4.775 J3, R3		5.175 R3		5.90 J3, R3	7.225 J3, R3			4.525 A5				Cleveland, Ohio
4.125 G3 4.15 M2	4.975 G3				6.10 G3	7.425 G3							Detroit, Mich.
3.925 N5													Newport, Ky.
3.925 J3, U1,Y1	4.775 J3, U1,Y1	5.275 U1,J3	5.175 J3, U1	5.675 U1	5.90 U1,J3 6.40 Y1	7.225 U1 7.725 Y1				\$8.70 J3, U1,Y1	\$7.40 J3, U1	6.10 U1, Y1	Gary, Ind. Harbor, Indiana
4.125 G2	4.975 G2	5.475 G2	5.875 G2								\$7.60 G2	6.30 G2	Granite City, Ill.
4.025 C9		5.375 C9						5.025 C9					Kokomo, Ind.
				5.675 E2				5.05 E2					Mansfield, Ohio
	4.775 A7		5.175 A7	5.675 A7									Middletown, Ohio
3.925 S1 5.175 N3	5.80 N3	5.275 N3	6.525 N3	5.45 S1 5.675 N3	5.90 S1						\$7.40 R3		Niles, Ohio Sharon, Pa.
3.925 J3, U1,P6, A7	4.775 J3, U1,P6	5.275 U1	5.175 U1		5.90 J3, U1	7.22 J3, U1	7.925 U1		4.525 A5 4.725 P6	\$8.70 J3, U1	\$7.40 J3, U1	6.10 U1	Pittsburgh, Pa. Midland, Pa. Butler, Pa.
3.925 P7	4.775 P7								4.525 P7				Portsmouth, Ohio
3.925 W3, W5	4.775 W3, W5,F3	5.275 W3, W5		5.675 W3, W5	5.90 W3	7.225 W3				\$8.70 W3, W5	\$7.40 W3, W5	6.10 F3, W5	Weirton, Wheeling, Follansbee, W. Va.
3.925 R3, U1,Y1	4.775 R3, Y1		5.175 Y1		5.90 U1,R3 6.40 Y1	7.225 R3 7.725 Y1			4.525 Y1	\$8.70 R3			Youngstown, Ohio
4.70 K1	5.875 K1				6.675 K1	8.275 K1			5.325 K1				Fontana, Cal.
4.025 C7													Geneva, Utah
								4.775 C6	4.865 S2				Kansas City, Mo.
4.625 C7		6.275 C7							5.325 B2				Los Angeles, Torrance, Cal.
									4.775 C6				Minnequa, Colo.
4.625 C7	5.725 C7	6.025 C7							5.175 C7	\$9.45 C7	\$8.15 C7		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.925 R3, T2	4.775 T2	5.275 R3, T2			5.90 T2			5.125 T2 5.225 R3	4.525 T2 R3	\$8.80 T2	\$7.50 T2		Fairfield, Ala. Alabama City, Ala.
4.325 S2									4.925 S2				Houston, Texas

IRON AGE
STEEL
PRICES
(Effective
Mar. 23, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	BARS						PLATES				WIRE
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg's. Bright
EAST	Bethlehem, Pa.			4.875 B3	6.325 B3	6.225 B3					
	Buffalo, N. Y.	4.15 B3 4.18 R3	4.15 B3,R3	5.25 B5	4.875 B3,R3	6.325 B3,B5	6.225 B3	4.10 B3		6.25 B3	5.525 W6
	Claymont, Del.							4.10 C4	5.55 C4		
	Contesville, Pa.							4.10 L4	5.55 L4		
	Conshohocken, Pa.							4.10 A2	5.15 A2	6.25 A2	
	Harrisburg, Pa.							4.10 C3	5.15 C3		
	Hartford, Conn.		5.75 R3		6.775 R3						
	Johnstown, Pa.	4.15 B3	4.15 B3		4.875 B3		6.225 B3	4.10 B3		5.55 B3	6.25 B3
	Morrisville, Pa.	4.30 U1	4.30 U1		5.825 U1						
	Newark, N. J.			5.65 W10		6.65 W10					
	New Haven, Conn.										
	Camden, N. J.			5.65 P10		6.50 P10					
	Putnam, Conn.			5.75 W10							
	Sparrows Pt., Md.		4.15 B3					4.10 B3		5.55 B3	6.25 B3
MIDDLE WEST	Palmer, Worcester, Mansfield, Mass.			5.75 B5 6.10 W11		6.775 B5					5.825 A5, W6
	Readville, Mass.			5.75 C14							
	Alton, Ill.	4.35 L1									5.70 L1
	Ashland, Ky.							4.10 A7			
	Canton-Massillon, Ohio			5.20 R2,R3	4.875 R3,T5	6.325 R2,R3,T5					
	Chicago, Joliet, Ill.	4.15 U1, N4, W8 4.22 R3	4.15 R3,N4	5.20 A5,W10, W8,B5,L2	4.875 U1, W8,R3	6.325 A5,W8, W10,L2, R3,B5		4.10 U1,W8	5.15 U1	5.55 U1	6.25 U1
	Cleveland, Ohio	4.21 R3	4.15 R3	5.20 A5,C13		6.325 A5, C13		4.10 J3,R3	5.15 J3		6.25 J3
	Detroit, Mich.	4.30 R5 4.35 G3		5.35 R5,P8 5.40 B5 5.45 P3	4.975 R5 5.075 G3	6.425 R5 6.475 P8 6.525 B5,P3	6.425 G3	4.30 G3		6.45 G3	
	Duluth, Minn.										5.525 A5
	Gary, Ind. Harbor, Crawfordsville	4.15 I3, U1, Y1	4.15 I3, U1, Y1	5.20 R3	4.875 I3, U1, Y1	6.325 R3,M5	6.225 U1, I3 6.725 Y1	4.10 I3, U1, Y1	5.15 I3	5.55 U1	6.25 U1, I3 6.75 Y1
	Granite City, Ill.							4.30 G3			
	Kokomo, Ind.										5.625 C9
	Sterling, Ill.	4.25 N4	4.25 N4								5.625 N4
	Niles, Ohio Sharen, Pa.							4.10 S1	5.55 S1	6.25 S1	
	Pittsburgh, Pa. Midland, Pa.	4.15 J3, U1	4.15 J3, U1	5.20 A5, J3, W10,R3,C8	4.875 U1,C11	6.325 A5,C11, W10,C8	6.225 J3, U1	4.10 J3, U1	5.15 U1	5.55 U1	6.25 J3, U1
WEST	Portsmouth, Ohio										5.525 A5, J3,P6
	Weirton, Wheeling, Follansbee, W. Va.	4.15 W3						4.10 W3			5.525 P1
	Youngstown, Ohio	4.15 U1, Y1 4.20 R3	4.15 R3, U1, Y1	5.20 Y1,F2	4.875 U1, Y1, C10	6.325 Y1, C10,F2	6.225 U1 6.725 Y1	4.10 R3, U1, Y1			6.75 Y1
	Emeryville, Cal.	4.90 J5	4.90 J5								
	Fontana, Cal.	4.85 K1	4.85 K1		5.925 K1		7.475 K1	4.75 K1		6.60 K1	6.95 K1
	Geneva, Utah							4.10 C7			6.25 C7
	Kansas City, Mo.	4.75 S2	4.85 S2		5.475 S2		6.825 S2				6.185 S2
	Los Angeles, Torrance, Cal.	4.85 B2,C7	4.85 B2,C7	6.65 R3	5.925 B2		6.925 B2				6.475 B2
	Minnequa, Colo.	4.60 C6	4.75 C6					4.95 C6			5.775 C6
	Portland, Ore.	4.90 O2									
	San Francisco, Niles, Pittsburg, Cal.	4.85 C7,P9 4.90 B2	4.85 C7,P9 4.90 B2				6.975 B2				6.475 C7
	Seattle, Wash.	4.90 B2,N6	4.90 B2,S11				6.975 B2	5.00 B2		7.15 B2	
SOUTH	Atlanta, Ga.	4.35 A8	4.35 A8								5.725 A8
	Fairfield, Ala. City, Birmingham, Ala.	4.15 T2,C16 4.18 R3	4.15 R3, T2, C16				6.225 T2	4.10 R3, T2			6.25 T2
	Houston, Ft. Worth, Lone Star, Tex.	4.55 S2	4.55 S2		5.275 S2			4.50 L3, S2			5.925 S2

Steel Prices

(Effective Mar. 23, 1954)

Key to Steel Producers

With Principal Offices

- | | | |
|---|---|--|
| A1 Acme Steel Co., Chicago | G2 Granite City Steel Co., Granite City, Ill. | P8 Plymouth Steel Co., Detroit |
| A2 Alan Wood Steel Co., Conshohocken, Pa. | G3 Great Lakes Steel Corp., Detroit | P9 Pacific States Steel Co., Niles, Cal. |
| A3 Allegheny Ludlum Steel Corp., Pittsburgh | G4 Greer Steel Co., Dover, O. | P10 Precision Drawn Steel Co., Camden, N. J. |
| A4 American Cladmetals Co., Carnegie, Pa. | H1 Hanna Furnace Corp., Detroit | P11 Production Steel Strip Corp., Detroit |
| A5 American Steel & Wire Div., Cleveland | I2 Ingersoll Steel Div., Chicago | R1 Reeves Steel & Mfg. Co., Dover, O. |
| A6 Angell Nail & Chaplet Co., Cleveland | I3 Inland Steel Co., Chicago | R2 Reliance Div., Eaton Mfg. Co., Massillon, O. |
| A7 Armco Steel Corp., Middletown, O. | I4 Interlake Iron Corp., Cleveland | R3 Republic Steel Corp., Cleveland |
| A8 Atlantic Steel Co., Atlanta, Ga. | J1 Jackson Iron & Steel Co., Jackson, O. | R4 Roebling Sons Co., John A., Trenton, N. J. |
| B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa. | J2 Jessop Steel Corp., Washington, Pa. | R5 Rotary Electric Steel Co., Detroit |
| B2 Bethlehem Pacific Coast Steel Corp., San Francisco | J3 Jones & Laughlin Steel Corp., Pittsburgh | R6 Rodney Metals, Inc., New Bedford, Mass. |
| B3 Bethlehem Steel Co., Bethlehem, Pa. | J4 Joslyn Mfg. & Supply Co., Chicago | S1 Sharon Steel Corp., Sharon, Pa. |
| B4 Blair Strip Steel Co., New Castle, Pa. | J5 Judson Steel Corp., Emeryville, Calif. | S2 Sheffield Steel Corp., Kansas City |
| B5 Bliss & Laughlin, Inc., Harvey, Ill. | K1 Kaiser Steel Corp., Fontana, Cal. | S3 Shenango Furnace Co., Pittsburgh |
| C1 Calstrip Steel Corp., Los Angeles | K2 Keystone Steel & Wire Co., Peoria | S4 Simonds Saw & Steel Co., Fitchburg, Mass. |
| C2 Carpenter Steel Co., Reading, Pa. | K3 Koppers Co., Granite City, Ill. | S5 Sloss Sheffield Steel & Iron Co., Birmingham |
| C3 Central Iron & Steel Co., Harrisburg, Pa. | L1 Laclede Steel Co., St. Louis | S6 Standard Forging Corp., Chicago |
| C4 Claymont Products Dept., Claymont, Del. | L2 La Salle Steel Co., Chicago | S7 Stanley Works, New Britain, Conn. |
| C5 Cold Metal Products Co., Youngstown | L3 Lone Star Steel Co., Dallas | S8 Superior Drawn Steel Co., Monaca, Pa. |
| C6 Colorado Fuel & Iron Corp., Denver | L4 Lukens Steel Co., Coatesville, Pa. | S9 Superior Steel Corp., Carnegie, Pa. |
| C7 Columbia Geneva Steel Div., San Francisco | M1 Mahoning Valley Steel Co., Niles, O. | S10 Sweet's Steel Co., Williamsport, Pa. |
| C8 Columbia Steel & Shifting Co., Pittsburgh | M2 McLouth Steel Corp., Detroit | S11 Seidelhuber Steel Rolling Mills, Seattle |
| C9 Continental Steel Corp., Kokomo, Ind. | M3 Mercer Tube & Mfg. Co., Sharon, Pa. | T1 Tonawanda Iron Div., N. Tonawanda, N. Y. |
| C10 Copperweld Steel Co., Pittsburgh, Pa. | M4 Mid-States Steel & Wire Co., Crawfordville, Ind. | T2 Tennessee Coal & Iron Div., Fairfield |
| C11 Crucible Steel Co. of America, New York | M5 Monarch Steel Co., Inc., Hammond, Ind. | T3 Tennessee Products & Chem. Corp., Nashville |
| C12 Cumberland Steel Co., Cumberland, Md. | M6 Mystic Iron Works, Everett, Mass. | T4 Thomas Strip Div., Warren, O. |
| C13 Cuyahoga Steel & Wire Co., Cleveland | N1 National Supply Co., Pittsburgh | T5 Timken Steel & Tube Div., Canton, O. |
| C14 Compressed Steel Shifting Co., Readville, Mass. | N2 National Tube Co., Pittsburgh | T6 Tremont Nail Co., Wareham, Mass. |
| C15 G. O. Carlson, Inc., Thorndale, Pa. | N3 Niles Rolling Mill Div., Niles, O. | T7 Texas Steel Co., Fort Worth |
| C16 Connors Steel Div., Birmingham | N4 Northwestern Steel & Wire Co., Sterling, Ill. | U1 United States Steel Corp., Pittsburgh |
| D1 Detroit Steel Corp., Detroit | N5 Newport Steel Corp., Newport, Ky. | U2 Universal-Cyclops Steel Corp., Bridgeville, Pa. |
| D2 Detroit Tube & Steel Div., Detroit | N6 Northwest Steel Rolling Mills, Seattle | U3 Fred Ulbrich & Sons, Wallingford, Conn. |
| D3 Driver Harris Co., Harrison, N. J. | N7 Newman Crosby Steel Co., Pawtucket, R. I. | W1 Wallingford Steel Co., Wallingford, Conn. |
| D4 Dickson Weatherproof Nail Co., Evanston, Ill. | O1 Oliver Iron & Steel Co., Pittsburgh | W2 Washington Steel Corp., Washington, Pa. |
| E1 Eastern Stainless Steel Corp., Baltimore | O2 Oregon Steel Mills, Portland | W3 Weirton Steel Co., Weirton, W. Va. |
| E2 Empire Steel Co., Mansfield, O. | P1 Page Steel & Wire Div., Monessen, Pa. | W4 Wheatland Tube Co., Wheatland, Pa. |
| F1 Firth Sterling, Inc., McKeesport, Pa. | P2 Phoenix Iron & Steel Co., Phoenixville, Pa. | W5 Wheeling Steel Corp., Wheeling, W. Va. |
| F2 Fitzsimmons Steel Corp., Youngstown | P3 Pilgrim Drawn Steel Div., Plymouth, Mich. | W6 Wickwire Spencer Steel Div., Buffalo |
| F3 Follanabee Steel Corp., Follanabee, W. Va. | P4 Pittsburgh Coke & Chemical Co., Pittsburgh | W7 Wilson Steel & Wire Co., Chicago |
| G1 Globe Iron Co., Jackson, O. | P5 Pittsburgh Screw & Bolt Co., Pittsburgh | W8 Wisconsin Steel Co., S. Chicago, Ill. |
| | P6 Pittsburgh Steel Co., Pittsburgh | W9 Woodward Iron Co., Woodward, Ala. |
| | P7 Portsmouth Div., Detroit Steel Corp., Detroit | W10 Wyckoff Steel Co., Pittsburgh |
| | | W11 Worcester Pressed Steel Co., Worcester, Mass. |
| | | Y1 Youngstown Sheet & Tube Co., Youngstown |

PIPE AND TUBING

Base discounts (per) l.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS									
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.			
	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.		
STANDARD T. & C.																								
Sparrows Pt. B3	24.25	8.0	27.25	12.0	29.75	15.5	32.25	16.5	32.75	17.5	33.25	18.0	34.75	18.0										
Youngstown R3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0										
Fentona K1	13.25	+2.0	16.25	1.0	18.75	4.5	21.25	5.5	21.75	6.5	22.25	7.0	23.75	7.0										
Pittsburgh J3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5		
Alton, Ill. L1	24.25	8.0	27.25	12.0	29.75	15.5	32.25	16.5	32.75	17.5	33.25	18.0	34.75	18.0										
Sharon M3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0										
Morrisville N2	24.25		27.25		29.75		32.25		32.75		33.25		34.75											
Pittsburgh N1	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5		
Wheeling W5	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0										
Wheeland W4	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5		
Youngstown Y1	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0										
Indiana Harbor Y1	25.25	9.0	28.25	13.0	30.75	16.5	33.25	17.5	33.75	18.5	34.25	19.0	35.75	19.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5		
Lorain N2	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5		
EXTRA STRONG PLAIN ENDS																								
Sparrows Pt. B3	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0										
Youngstown R3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0										
Fentona K1	16.75		20.75		22.75		23.25		23.75		24.25		24.75		16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75		
Pittsburgh J3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0										
Alton, Ill. L1	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0										
Sharon M3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0										
Pittsburgh N1	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75		
Wheeling W5	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0										
Wheeland W4	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0										
Youngstown Y1	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75		
Indiana Harbor Y1	28.75	14.0	32.75	18.0	34.75	21.5	35.25	20.5	35.75	21.5	36.25	22.0	36.75	21.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75		
Lorain N2	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0										

Galvanized discounts based on zinc, at 11¢ per lb. East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/2 in., 1 3/4 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 3 pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb. use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only butt-weld and seamless, 2 1/2 pts. higher discount. Plain ends, butt-weld and seamless, 3 in. and under, 4 1/2 pts. higher discount. Butt-weld jobbers' discount, 5 pct. East St. Louis zinc price now 9.75¢.

March 25, 1954

(Effective Mar. 23, 1954)

To identify producers, see Key on preceding page.

MERCHANT WIRE PRODUCTS

CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa., <i>L4</i>	*32.7	
Washington, Pa., <i>J2</i>		
Claymont, Del., <i>Cv</i>		
New Castle, Ind., <i>J2</i>		32.50
Nickel-carbon		
10 pct. Coatesville, Pa., <i>L4</i>	37.5	
Inconel-carbon		
10 pct. Coatesville, Pa., <i>L4</i>	46.10	
Monel-carbon		
10 pct. Coatesville, Pa., <i>L4</i>	38.90	

* Includes annealing and pickling, sandblasting.

Base price, f.o.b., dollars per 100 lb.

	Standard & Coated Nails							
F.a.b. Mill	Col	Col	Col	Col	Col	Col	d./lb.	d./lb.
Alabama City R3	131	140			149		153	6.675 7.075
Aliquippa, Pa. J3	131	143					150	6.675 7.225
Atlanta A6	133	145			151		156	6.775 7.340
Bartonville K2	133	144					157	6.775 7.275
Buffalo W6								
Chicago, Ill. N4	131	142		149	155	155	6.675 7.175	
Cleveland A6	137							
Cleveland A5							6.675	
Crawfords M4	133	145		151			153	6.775 7.375
Denora, Pa. A5	131	140		149			153	6.675 7.075
Duluth A5	131	140	145	149			153	6.675 7.075
Fairfield, Ala. T3	131	140		149			153	6.675 7.075
Galveston D4	139	148						
Houston S2	139	148				161	7.075 7.475	
Johnstn., Pa. B3	131	143	145		156		156	6.675 7.225
Joliet, Ill. A5	131	140		149			153	6.675 7.075
Kokomo, Ind. C9	133	142		151		155	6.775 7.175	
Los Angeles B2							7.625	
Kansas City S2	143	152	161			165	7.275 7.825	
Minnequa C6	136	148	150	154	162	162	6.925 7.375	
Monessen P6	131	145				157	6.675 7.225	
Moline, Ill. R3			145					
Pittsburg, Cal. C7	150	163		173	173	173	7.625 8.025	
Portsmouth P7							6.675	
Rankin, Pa. A5	131	140				153	6.675 7.075	
Sa. Chicago R3	131	140	145	149		153	6.675 7.075	
S. San Fran. C6						173		
Sparrows Pt. B3	133			151	158	158	6.775 7.325	
Struthers, O. Y1							6.675 7.175	
Worcester A5	137						6.975	
Williamsport, Pa. S10	133		158					

Cut Nails, carloads, base \$8.00 per keg (less 20¢ to jobbers), at Conshohocken, Pa. (A7).

* Alabama City and So. Chicago don't include zinc extra. Galvanized products computed with zinc at 11.0¢ per lb.

C-R SPRING STEEL

		CARBON CONTENT				
Cents Per Lb. F.o.b. Mill		0.26- 0.40	0.41- 0.60	0.61- 0.80	0.81- 1.05	1.06- 1.35
Bridgeport, Conn. <i>S7</i>	5.75	7.65	8.60	10.55	12.00	
Carnegie, Pa. <i>S9</i>		7.65	8.60	10.55	12.00	
Cleveland <i>A5</i>	5.45	7.65	8.60	10.55	12.00	
Detroit <i>D1</i>	5.65	7.65	8.60	10.55		
Detroit <i>D2</i>	5.65	7.85				
Harrison, N. J. <i>C11</i>			8.90		13.15	
Indianapolis <i>C5</i>	5.60	7.80	8.60	10.55		
New Castle, Pa. <i>B4</i>	5.80	8.00	8.60			
NewHaven, Conn. <i>D1</i>	5.90	7.95	8.90	10.85		
Riverside, Ill. <i>A1</i>	5.70	7.80	8.75	10.70	13.00	
Sharon, Pa. <i>S1</i>	5.45	7.65	8.60	10.55	12.00	
Trenton <i>R4</i>		7.95	8.90	10.85	13.10	
Wallingford <i>W1</i>	6.20	7.95	8.90	10.85	13.10	
Warren, Ohio <i>V4</i>	5.45	7.65	8.60	10.55	12.00	
Weirton, W. Va. <i>W3</i>	5.45	7.65	8.60	10.55	12.00	
Worcester, Mass. <i>A5</i>	6.30	7.95	8.90	10.85	13.15	
Youngstown <i>C3</i>	5.45	7.65	8.60	10.55		

* Sold on Pittsburgh base.

BOILER TUBES

3 per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD- In.	R.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox...	2	13	27.34	32.98	26.51	31.94
	2½	12	36.82	44.41	35.70	43.07
	3	12	42.52	51.28	41.23	49.73
	3½	11	49.63	59.87	48.13	58.06
	4	10	65.91	79.50	63.92	77.16
National Tube....	2	13	.....	32.98	26.51	.....
	2½	12	36.82	44.41	35.70	.....
	3	12	42.52	51.28	41.23	.....
	3½	11	49.63	59.87	48.13	.....
	4	10	65.91	79.50	63.92	.....
Pittsburgh Steel....	2	13	27.34	32.98	.....	.....
	2½	12	36.82	44.41	.....	.....
	3	12	42.52	51.28	.....	.....
	3½	11	49.63	59.87	.....	.....
	4	10	65.91	79.50	.....	.....

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1) 500 to 1499 lb. (2) 20,000 lb or over. (3) 450 to 1499 lb. (4) 500 to 9999 lb. (5) 1000 lb or over. (6) 400 to 1499 lb.

Miscellaneous Prices

(Effective Mar. 23, 1954)

TOOL STEEL

F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.48
18	4	1	—	5	2.16
18	4	2	—	—	1.64
1.5	4	1.5	8	—	.895
6	4	2	6	—	1.005
High-carbon chromium					
Oil hardened manganese					
Special carbon					
Extra carbon					
Regular carbon					
Warehouse prices on and east of Miss-					
issippi are 3.5¢ per lb. higher. West of					
Mississippi, 5.5¢ higher.					

CAST IRON WATER PIPE

Per Net Ton

6 to 24-in., del'd Chicago	\$111.80 to \$115.30
6 to 24-in., del'd N. Y.	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50
6-in. and larger f.o.b. cars, San	
Francisco, Los Angeles, for all	
rail shipments; rail and water	
shipments less	\$129.50 to \$131.50
Class "A" and gas pipe, \$5 extra; 4-in.	
pipe is \$5 a ton above 6-in.	

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.

Gross Ton

Openhearth lump	\$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	9.90
Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.	

COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa.	\$14.25 to \$14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$16.50 to \$17.00
Foundry, oven coke	
Buffalo, del'd	\$23.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.95
Swedeland, Pa., f.o.b.	23.85
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb. f.o.b. plant threaded electrodes with nipples, unboxed

Diam. in.	Length in.	Cents Per lb.
GRAPHITE		
24	84	20.50
20	72	20.00
12, 14, 18	72	20.50
7 to 10	60	21.00
6	60	23.25
4	40	26.00
3	40	27.25
2 1/2	30	28.00
2	24	43.50
CARBON		
40	100, 110	8.95
35	110	8.95
30	110	8.95
24	72 to 84	9.10
20	90	8.95
17	72	9.10
14	72	9.50
10, 12	60	10.30
8	60	10.55

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List		Less	
	Keg	K.	Keg	K.
1/2 in. & smaller	+2	15	+2	18
9/16 in. & 5/8 in.	+7	11	+32*	+10*
3/4 in. to 1 1/2 in.				
Inclusive	+8	10	+27**	+6**
1 1/2 in. & larger	+9	9	+27	+6
* 9/16 to 3/4 in.				
** 3/4 to 1 1/2 in.				

Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	2	18	+20	net
3/4 in. to 1 1/2 in.				
Inclusive	+6	12	+25	+4
1 1/2 in. & larger	+8	10	+25	+4

Nuts, Cold Punched—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	9	24	+2	15
3/4 in. to 1 1/2 in.				
Inclusive	+1	16	+9	9
1 1/2 in. & larger	+16	3	+20	net

Nuts, Semi-Finished—Hexagon

1/2 in. & smaller	23	36	14	28
9/16 in. & 5/8 in.	18	32	4	20
3/4 in. to 1 1/2 in.				
Inclusive	8	23	+8	10
1 1/2 in. & larger	+14	5	+20	net
Light				
7/16 in. & small-	33	43		
er				
1/2 in. thru 3/4 in.	26	37		
3/4 in. to 1 1/2 in.				
Inclusive	18	30		

Stove Bolts

	Pct Off List
Packaged, steel, plain finished 4 1/2—10	
Packaged, plain finish	25 1/2—10
Bulk, plain finish**	59*
*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.	
**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.	

Rivets

	Base per 100 lb
1/2 in. & larger	\$8.90
7/16 in. and smaller	30

Cap and Set Screws

(In bulk)	Pct Off List
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 3/4 in. x 6 in., SAE 1020, bright	40
3/4 in. thru 1 in. up to & including 6 in. 1/4 in. thru 3/4 in. x 6 in. & shorter high C double heat treat	26
3/4 in. thru 1 in. up to & including 6 in. Milled studs	43
Flat head cap screws, listed sizes	17
Fillister head cap, listed sizes	12
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	7

Machine and Carriage Bolts

	Pct Off List
Less	
Case	C.
1/2 in. & smaller x 6 in. & shorter	4 20
9/16 in. & 5/8 in. x 6 in. & shorter	5 21
3/4 in. & larger x 6 in. & shorter	3 19
All diam longer than 6 in.	+4 13
Lag, all diam. x 6 in. & shorter	12 27
Lag, all diam. longer than 6 in.	8 23
Plow bolts	30 ..

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$109.00
No. 1 Ohio	102.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	102.00
No. 2 Ohio	93.00
Ground fire clay, net ton, bulk (except Salina, Pa. add \$1.50)	16.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$115.00
Childs, Hays, Pa.	120.00
Chicago District	125.00
Western Utah	131.00
California	128.00
Super Duty	
Hays, Pa., Athens, Tex., Wind-	
ham	132.00
Curtner, Calif.	150.00
Silica cement, net ton, bulk, East-	
ern (except Hays, Pa.)	19.00
Silica cement, net ton, bulk, Hays, Pa.	21.00
Silica cement, net ton, bulk, Chi-	
cago District, Ensley, Ala.	20.00
Silica cement, net ton, bulk, Utah and Calif.	28.50

Chrome Brick

Per net ton

Standard chemically bonded Balt.	\$86.00
Standard chemically bonded, Curt-	
ner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	\$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite

St. %—m. grains

Domestic, f.o.b. Baltimore in bulk fines removed	\$64.40
Domestic, f.o.b. Chewah, Wash., Luning, Nev.	
In bulk	38.00
In sacks	43.75

Dead Burned Dolomite

Per net ton

F.o.b., bulk, producing points in: Pa. W. Va., Ohio	\$14.50
Midwest	14.60
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF₂ content

72 1/2%	\$44.00
70% or more	42.50
60% or less	38.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron, c.l.f. New York, ocean bags	11.25¢
Canadian sponge iron, del's. in East	12.0¢
Domestic sponge iron, 98+% Fe, carload lots	18.0¢
Electrolytic iron, annealed, 99.5+% Fe	44.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	60.0¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe. 63.0¢ to 80.0¢	
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe. 83.0¢ to \$1.48	
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	43.50¢
Copper, reduced	43.50¢
Cadmium, 100-199 lb 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd	\$3.00
Lead	21.00¢
Manganese	57.0¢
Molybdenum, 99%	\$2.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	43.50¢
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	91.0¢
Stainless steel, 316	\$1.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	\$5.35
Zinc, 10 ton lots	17.5¢ to 25.0¢

Ferroalloy Prices

(Effective Mar. 23, 1954)

Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.
65-72 Cr, 2% max. Si
0.025% C ... 34.50 0.20% C ... 33.50
0.06% C ... 34.50 0.50% C ... 33.25
0.10% C ... 34.00 1.00% C ... 33.00
0.15% C ... 33.75 2.00% C ... 32.75
65-69% Cr, 4.9% C ... 24.75
62-66% Cr, 4.6% C, 6-9% Si ... 25.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C
Carloads ... 25.85
Ton lots ... 28.00
Less ton lots ... 29.50

High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.
0.10% max. C ... \$1.18
0.50% max. C ... 1.14
9 to 11% C ... 1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)
Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, bulk 2-in. x down, 24.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.
Bulk 1-in. x down, 24.90¢ per lb contained Cr plus 12.69¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump delivered.
30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads ... 19.00
Ton lots ... 22.10
Less ton lots ... 23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads ... 20.00
Ton lots ... 22.30
Less ton lots ... 23.30

5M2

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots ... 17.50
Less ton lots ... 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn.
Ton lots ... 16.50
Less ton lots ... 17.75

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload packed ... 17.50
Ton lots to carload packed ... 18.50
Less ton lots ... 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 75 pct Mn;
Cents per-lb
Producing Point
Marietta, Ashtabula, O.; Alloy,
W. Va.; Sheffield, Ala.; Portland
Ore. ... 10.00
Clariton, Pa. ... 10.00
Sheridan, Pa. ... 10.00
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk ... 12.50
Ton lots, packed ... 14.05

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.
Manganese Silicon
16 to 19% 3% max. ... \$84.00
19 to 21% 3% max. ... 86.00
21 to 23% 3% max. ... 88.50
23 to 25% 3% max. ... 91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed ... 36.95
Ton lots ... 38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads ... 30.00
Ton lots ... 32.00
250 to 1999 lb ... 34.00
Less than 250 lb ... 37.00
Premium for hydrogen-removed metal ... 1.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.
Carloads Ton Less
0.07% max. C, 0.06%
P, 90% Mn ... 30.00 31.85 33.05
0.07% max. C ... 27.95 29.80 31.00
0.15% max. C ... 27.45 29.30 30.50
0.30% max. C ... 26.95 28.80 30.00
0.50% max. C ... 26.45 28.30 29.50
0.75% max. C, 80-85%
Mn, 5.0-7.0% Si ... 23.45 25.30 26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.
Carload bulk ... 11.40
Ton lots ... 13.05
Briquet contract basis carlots, bulk delivered, per lb of briquet ... 12.65
Ton lots, packed ... 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$92.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$89.50. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.
Ton Lots Carloads
96% Si, 2% Fe ... 20.10 18.00
97% Si, 1% Fe ... 20.60 18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.
Carloads, bulk ... 6.95
Ton lots ... 8.55

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.
25% Si ... 20.00 75% Si ... 14.30
50% Si ... 12.40 85% Si ... 15.55
65% Si ... 13.60 90.95% Si ... 17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.
Cast Turnings Distilled
Ton lots ... \$2.05 \$2.95 \$3.75
Less ton lots ... 2.40 3.30 4.55

Ferrovanadium

35-55% contract, basis, delivered, per pound, contained
Openhearth ... \$3.00-\$3.10
Crucible ... 3.10-3.20
High speed steel (Primos) ... 3.20-3.25

Alsiifer, 20% Al, 40% Si, 40% Fe, contract basis f.o.b. Suspension Bridge, N. Y.

Carloads ... 9.90
Ton lots ... 11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langloeth, Pa., per pound contained Mo ... \$1.15

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots ... \$9.50
Less ton lots ... 9.55

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta ... \$4.75

Ferromolybdenum, 55-75%, f.o.b. Langloeth, Pa., per pound contained Mo ... \$1.32

Ferrophosphorus, electric, 33-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton ... \$90.00
10 tons to less carload ... \$110.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.50
Less ton lots ... 1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton ... \$177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. ... \$3.80

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langloeth, Pa. ... \$1.14
bags, f.o.b. Washington, Pa., Langloeth, Pa. ... \$1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump ... 14.50¢
Ton lots, bulk lump ... 15.75¢
Less ton lots, lump ... 16.35¢

Vanadium Pentoxide, 96-99% V₂O₅ contract basis, per pound Contained V₂O₅ ... \$1.25

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk ... 8.00¢

Boron Agents
Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B ... \$5.35

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ... 45¢
Less ton lots, per pound ... 50¢

Corbortam, Ti 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4-5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots ... \$1.20
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B85
14 to 10% B ... 1.20
19% min. B ... 1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over
No. 1 ... \$1.00
No. 668¢
No. 7950¢

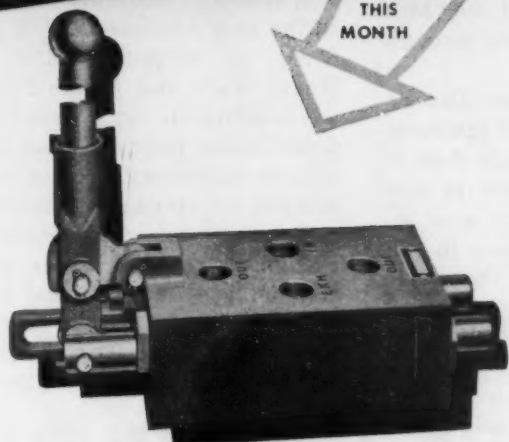
Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots ... \$1.40
Less ton lots ... 1.57

Nickel - Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 2.00% max. Fe, balance Ni, delivered
Less ton lots ... \$2.05

Silenz, contract basis, delivered
Ton lots ... 45.00¢

Quick-As-Wink AIR AND HYDRAULIC Control Valves

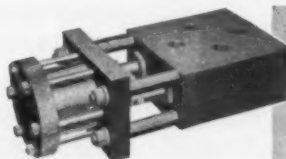
FEATURE
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● Unsurpassed for efficient trouble-free service controlling single or double acting hydraulic cylinders and other important high pressure hydraulic circuits. Positive, fast acting. All parts are in pressure balance, eliminating any tendency to creep or crawl. Machined steel housings, with chrome plated and polished stainless steel plungers. Self sealing U-packers. Metal valving rings take the impingement of the liquid, minimizing wear on the packings. $\frac{1}{2}$ " to $1\frac{1}{2}$ " sizes. Also available in pilot operated designs; sizes to 4". Write for details.

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PILOT CYLINDER OPERATED HYDRAULIC VALVES

Two position valves $1\frac{1}{2}$ " to 4" sizes for line pressures from 1000 to 5000 psi. Valve is placed close to the work and operated from a central control point with an easy to handle air valve avoiding operator fatigue.

SOLENOID OPERATED AIR VALVES

Widely used for controlling single and double acting air cylinders, clutch and brake controls, etc. Solenoid is directly connected to valve operating mechanisms. $\frac{3}{8}$ " to $1\frac{1}{2}$ " sizes. 2-way, 3-way and 4-way actions.



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GRIFFIN
Manufacturing Company
ERIE, PENNSYLVANIA

March 25, 1954

185

RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT

D. C. MOTORS					
Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCF	600	400/500
1	2000	Whee.	MIH	600	230/460
1	1200	G.E.	MCF	600	150/350
1	940	Whee.	QM	250	140/170
1	940	Whee.		250	450/550
1	825	Whee.		250	85/190
1	600	AL Ch.		250	400/800
1	500	Whee.	CC-210	600	200/900
1	500	G.E.	MCF	600	300/900
2	450	Whee.		550	415
1	400	G.E.	MCF	550	300/1050
1	300	Whee.	CS-5004	250	575/1150
1	200/300	G.E.	MPC	230	280/920
1	250	G.E.	MPC	230	400/800
1	200	Bel.	1870T	230	720
1	300	Whee.	CB-5112	250	400/800
1	150	G.E.		600	250/750
1	150	Cr. Wh.	85H	230	1150
1	150	Cr. Wh.	SEH-TMFC	230	890
1	150	Whee.	SK-151B	230	900/1800
1	150	Whee.	SK-301	230	300/950
1	50/120	G.E.	MCF	230	250/1000
2	100	Whee.	SK-181	230	450/1000
1	100	G.E.	CDP-115	230	1750

A. C. MOTORS					
3 phase—60 cycle					
SLIP RING					
Qu.	H.P.	Make	Type	Volts	Speed
1	1500	G.E.	MT-40H	2300	290
1	1500	ABB		2300	720
1	1200	G.E.	MT	2300	275
2	1000	A.C.	MIH	2300	240
1	1000	G.E.	MT-451	2300	321
1	500	G.E.	MT-574Y	6000	900
1	500	Whee.	CW	550	350
1	450	G.E.	IM	440	720
1	400	Whee.	CW-900A	440	1170
1	400	Whee.	CW	440	514
1	400	Whee.	CW-1218	2300	485
1	350	G.E.	MT-442Y	2200/4000	253
1	350	G.E.	IM-17A	440/2000	720
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-550H	2300	1800
1	250	AL Ch.		550	600
1	200	Cr. Wh.	26QH	440	508
1	200	G.E.	IM	440	435
1	200	G.E.	METP	440	1170
1	150 (unused)	Whee.	CW	2300	435
1	150	G.E.	IM-18	440	600
2	125	A.C.		440	885
1	125	AL Ch.		440	720
4	125	G.E.	MT-566Y	440/2300	485
1	100	G.E.	IM	440	600
4	100	A.C.	ANY	440	695

SQUIRREL CAGE					
Qu.	H.P.	Make	Type	Volts	Speed
2	650	G.E.	FT-550BY	440	8570
2	450	Whee.	CB-1420	2300/4150	954
1	300	Whee.	CB	440	1170
1	200	G.E.	IK-17	440	840
3	200	G.E.	KT-557	440	1800
1	150	Whee.	CS-850H	440	880
1	150	Whee.	CS	440	880
1	150/75	G.E.	IK	440 900/450	
2	125	AL Ch.	ARW	2200	1750

SYNCHRONOUS					
Qu.	H.P.	Make	Type	Volts	Speed
1	4350	C.W.	3501-RL	13800/6000	514
2	3500	G.E.	TS	2300	257
2	2100	G.E.	ATI	2300	260
2	1750	G.E.	ATI	2300	3600
2	2000	Whee.		2300	130
2	725	G.E.	ATI	2300/12000	600
1	720	G.E.	TS	2300/4000	720
1	500	Whee.	IM	2300/4100	1800
1	500	Whee.		440	900
1	450	Whee.		2300	128.5
1	450	Whee.		2300	450
1	400	G.E.	TS	2300	400

M-G Sets—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000/2400	G.E.	450	250/200	2800/4000
2	1750/2100	G.E.	514	250/200	2800/4000
1	2000	G.E.	500	250	11000
2	2000	G.E.	514	600	6600/12200
1	1500	G.E.	720	600	6600/12200
1	1500	C.W.	514	30/115	6000/13000
2	1000	Whee.	900	600	4150
1	1000	G.E.	900	200	6000
1	1000 (EU)	G.E.	900	250	2200
1	750	Whee.	900	275	4170
1	750	C.W.	514	30/115	2300
1	600	G.E.	720	250	440/2300

TRANSFORMERS					
Qu.	KVA	Make	Type	Ph.	Voltages
1	5000	Whee.	OISC	3	3300x26400
1	2500	Whee.	OISC	3	36400/12200x1000
3	2000	G.E.	HVDDJ	1	60000x12200
1	1500	G.E.	HT	3	12200x2300
1	1000	G.E.	HVDDJ	1	3400x400
6	1000	Wagner	OISC	1	12200x400

FREQUENCY CHANGER SETS				
Qu.	KW	Make	Freq.	Volts
1	13500	Whee.	35/60	13200/13200
1	3000	G.E.	25/60	2300/2300/4000
2	2500	G.E.	25/62.5	2300/2300
1	1000	G.E.	25/58.3	4400/2300
1	500	AL Ch.	25/60	11000/2300

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47 Howell Street, Jersey City 6, N. J.

The Clearing House

NEWS OF USED AND REBUILT MACHINERY

Direct Sale In Detroit . . . Used machinery dealers are essentially middlemen and nothing hurts them more than any maneuver that moves a piece of equipment directly from the original user to a second user without going through a dealer's hands.

That is why a current Detroit development has some of the trade in a mild uproar. Not only does it involve a direct approach to secondary customers, but it also includes a total dollar value in the millions of some of the most wanted tools—large punch presses.

The issue includes 26 of what one dealer calls "the most desirable" punch presses. They will be sold by Kaiser-Willys in liquidating some of the equipment left at Willow Run. Apparently it was decided since they were not needed in the Willys plants in Toledo to place them on the market.

One dealer told THE IRON AGE that he had considered at least part of the lot in the bag. But when he sounded out prospective customers he was dismayed to find out that they already had the lists and that interested plants were planning to make their own ventures into the bidding.

Dealers vs. Customers . . . At the sale, therefore, dealers will be bidding against customers, with small chance of scoring a coup. Bids are being taken now for delivery after July 1.

Since the word is out, the prize items in the group are two heavy presses with a replacement value of \$292,685 each. From this they range down to less expensive ones with a value of about \$39,000. All are reasonably late models and were installed new when Kaiser-Frazer went into Willow Run in the postwar years. It's history now that Kaiser bought Willys, sold Willow Run to General Motors, and is moving its manufacturing operations into Toledo.

Along the same line, a lot of the trade is muttering about defense tools coming into the market.

Dealers feel that at least they should be allowed a chance to deal for them as they were in the days of the War Assets Administration.

A Gloomy Possibility . . . Buried in the new omnibus tax bill (H.R. 8300), as recommended by the House Ways and Means Committee, is provision for a more liberal depreciation policy for tax write-offs on machinery. As the recommended bill stands the advantages of this write-off apply only to new machinery. No provisions at all are included for additional depreciation write-off on a used machine of any age. Exact wording is as follows:

G. Depreciation (sec. 167)

"The liberalized depreciation methods provided in the bill are to apply to all types of tangible depreciable assets, including farm equipment, machinery, and buildings, rental housing, and industrial and commercial buildings as well as machinery and equipment. They are limited, however, to property new in use and therefore never before subject to depreciation allowances. . . In the case of property acquired by the taxpayer after December 31, 1953, the liberalized depreciation methods apply only to new property."

The provisions quoted are part of the Internal Revenue Code of 1954, the huge package deal tax bill now going through Congress.

However the bill isn't law yet. It passed in the House, now goes to the Senate Finance Committee; if it passes there it moves out on the Senate floor and thence to the President for approval or veto.

Randy Vinson, Executive Director of Machinery Dealers National Assn., has arranged for MDNA to get representation at the hearings held by the Senate Finance Committee. If these provisions of the bill are going to be a real hardship to the used machinery business here's the place where dealers can tell the lawmakers about it in detail.



Production facts you should know about ALCOA[®] Aluminum Forgings

Improved equipment and production
techniques mean aluminum forgings now
compete with other metals and
fabricating processes

*View of 15,000-ton hydraulic forging press
operated by Alcoa's Cleveland Works.*

*Not only has this press contributed
to research on still heavier presses, it has
permitted significant design improvements by
way of reducing "small pieces" construction.*

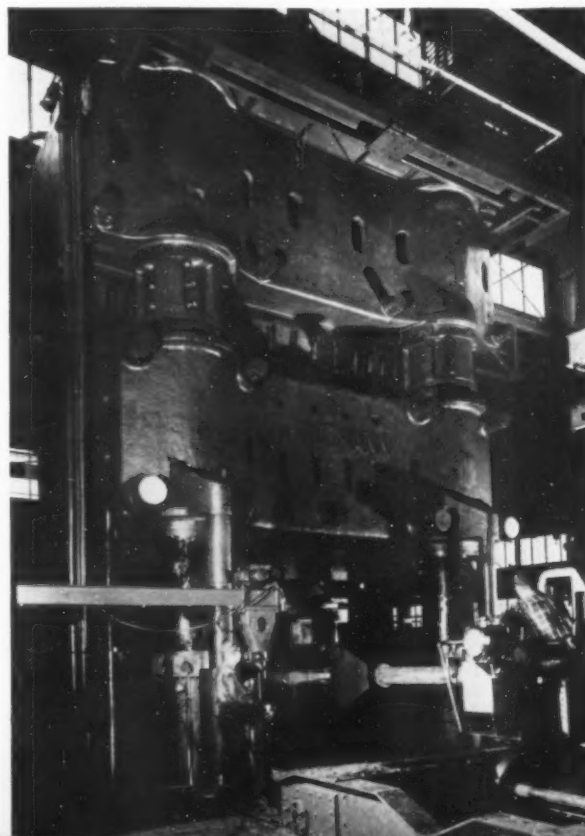
In the period between 1946 and 1949, production of aluminum forgings increased over 100 per cent at Alcoa alone. With the addition of the large 15,000-ton hydraulic press in the Cleveland Works, along with other equipment since put into operation, production has increased still further. These improved facilities mean higher output of better quality aluminum forgings at a cost that makes them competitive with other metals and other fabricating processes.

What about the future? We suspect you have already heard of the giant 35,000 and 50,000-ton presses now being constructed for our Cleveland Works—expected to be in operation this year—and are aware of the tremendous new design possibilities facilities such as these will provide.

Parts will be still bigger, will have thinner web sections, less draft, closer tolerances, better dimensional stability, to say nothing of being more complicated.

What's more, an ever-increasing share of the aluminum forging output from now on will be commercial, not military. In short, automotive, electrical appliance, tool, and engine designers, in fact, designers in all of industry—taking hints from the military—are turning to aluminum forgings for better, stronger, lighter, yet lower cost parts.

A glance through the next few pages will show you reasons why.

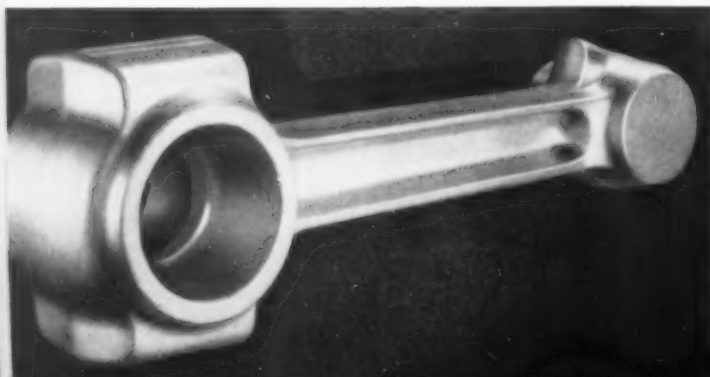




These people use **ALCOA** Aluminum Forgings



FORGED WHEELS—Weighing 48 pounds, 40 less than its steel counterpart, this Alcoa Forged Aluminum Disc Wheel for trucks and buses is proving its superiority by reducing unsprung weight, allowing larger payloads. Machined from an aluminum forging, these wheels literally are rounder which means less vibration, less maintenance.

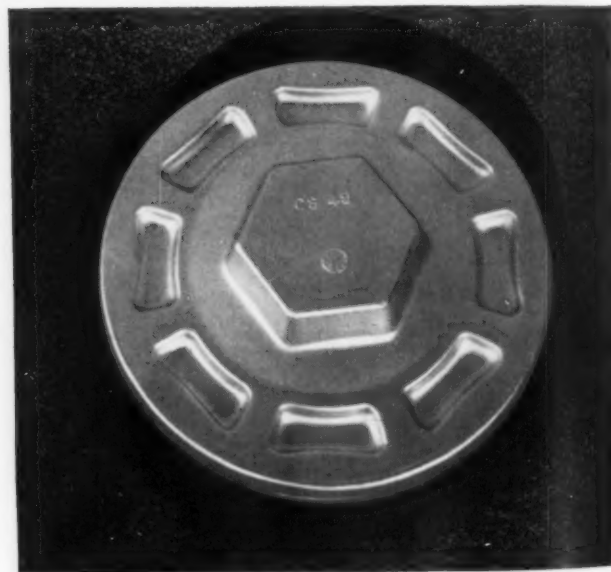


Aluminum forgings possess all the inherent characteristics of aluminum, such as light weight, corrosion resistance, and good machinability; and combine with these advantages great strength, comparable to that of structural steel.

The result: high strength-weight ratios—excellent for such applications as aircraft, truck and bus where range, speed and payload depend on light body weight, yet sufficient strength to support that load.

Weighing about one-third less than structural steel, aluminum forgings help reduce operator fatigue when they are used in parts frequently carried, lifted or handled. Hand power tools are a good example. With their lower elastic modulus, aluminum forgings have several times the impact-absorbing capacity of mild steel.

Other features make aluminum forgings stand out. For example, they are easily machined, often at speeds of 1000 fpm. But, their smooth, bright surfaces often make subsequent machining unnecessary. What's more, inspection costs are less. Part dimensions are uniform, keeping scrap loss to a minimum.



CUTTER DISK—An Alcoa Forged Cutter Disk to be used on a concrete surfacing machine. Because of their great strength, Alcoa Forgings are perfect for highly stressed moving parts. Further, their light weight means less driving horsepower. Sturdy, these forgings can stand severe abuse in emergencies, provide dependable service under normal load, all with less maintenance.

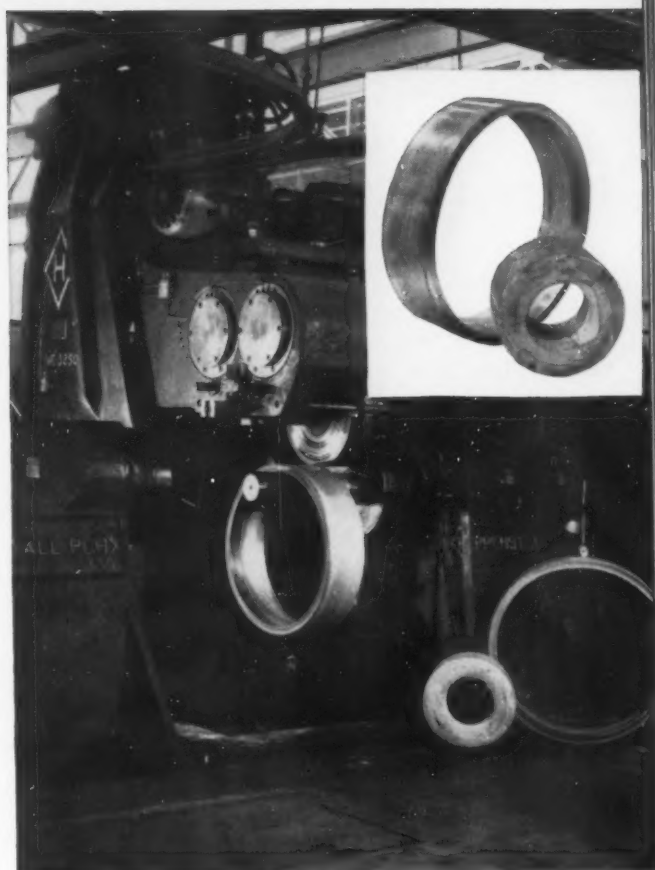
CONNECTING RODS—Forged aluminum connecting rods not only are strong, but, being light, more of the horsepower developed by the engine can be directed toward driving the outside load rather than the engine's own parts. Alcoa Forged Pistons are in use today in diesel engines driving trucks, buses and railroad locomotives.

what about cost?

Cost of the piece as it comes from the forging press is only half of the aluminum forging cost story. To keep this half low, Alcoa is constantly adding new equipment and improving the old. For example, the largest facilities in the world for sinking aluminum dies will soon be in operation at the Cleveland Works. And, a new machine for roll forming aluminum rings in sizes up to 40 inches O.D. and 20 inches wide has been added. The ring roller, as it is called, is capable of turning out rings to closer tolerances, with better surface finishes than any previous methods. Then, of course, there's the 15,000-ton press. These new facilities spell more faithful reproduction of design, fewer rejections, faster inspection, hence, lower as-forged costs.

The other half of the cost picture concerns cost per finished piece. As forgings, shapes can be made more complete when they come from the press. The result: design can be greatly simplified, improving quality, and keeping subsequent machining, assembling, and finishing operations to a minimum.

So, if you have hesitated to make your product as an aluminum forging because of cost, take another, longer look . . . today.



New ring roller now in production at Alcoa's Cleveland Works. This machine is capable of producing rings up to 40 inches O.D. and 20 inches wide with closer tolerances, better surface finish, and at lower cost than previous methods.

Secondary operations easily performed

Perhaps by now you have already had experience with Alcoa Forgings and have found out for yourself how easily and quickly secondary operations can be performed on them. And your experience would not be unique. They can be machined at high feeds and speeds, drilled, reamed, threaded, and tapped—all accurately—at rates that defy comparison.

There are a few rules of thumb that are good to follow when tackling these operations. For example, because of aluminum's low elastic modulus, it will "flex" or "spring" about three times as far as steel under a given load. To maintain close tolerances, then, it is important that the work be securely clamped before attempting subsequent machining.

Because aluminum will expand or contract more with changes in temperature, an effort should be made to minimize temperature variations of the piece, often

caused by using dull tools or improper coolants.

Since each alloy is different, machinability of each must be considered. Alloy 11S is the free-machining alloy. Alloys 14S, 25S and 18S also offer excellent machinability.

Speeds for drilling Alcoa Forgings with high-speed drills can vary up to 600 peripheral feet per minute. For threading, hand and machine taps of the ground thread type will produce smooth, accurate threads when they have flutes undercut to provide a top rake of 10 to 20° at the leading edges. Excellent threads can be chased on an engine lathe even in the softest aluminum by using a single-pointed threading tool. If sawing is necessary, circular saw blades for aluminum may be operated satisfactorily at peripheral speeds ranging from 5,000 to 15,000 feet per minute.

Finishes for Alcoa Forgings

Frequently, surface finishes on Alcoa Forgings are satisfactory as fabricated. But, to enhance appearance or to add a protective coating, it is often desirable to perform subsequent finishing operations—mechanical, chemical, or electrochemical. Alcoa Forgings lend themselves to all of these.

Among the mechanical finishing operations are: grinding, polishing, buffing or coloring, sometimes referred to as color buffing. Follow these rules of thumb: Always have the working surface as clean as possible and, too, when polishing, try to follow the direction of metal flow.

Chemical finishes such as frosted, diffuse reflector, etching, and Alrok®, provide decorative coatings that resist corrosion but are not particularly abrasion resistant. Often, they precede electrochemical or Alumi-

lite* finishes. These provide a harder oxide coating than that which normally forms on aluminum. Alumi-lite finishes offer excellent protection against weather or chemical attack. And, because the coating is basically hard, it has a substantial resistance to wear and rubbing abrasion not possible with plain chemical finishes.

Too, Alcoa Forgings can be enameled, lithographed, or lacquered, whether for protection, eye appeal, or to emphasize an important sales message.

Remember, each Alcoa Alloy reacts differently with respect to holding a paint, but all are easier to protect with paint than most other metals if surfaces are properly prepared. Easiest and quickest way to do this is by solvent cleaning, or by roughening surfaces with sandblasting or scratchbrushing.

*Trade Name of ALUMINUM COMPANY OF AMERICA

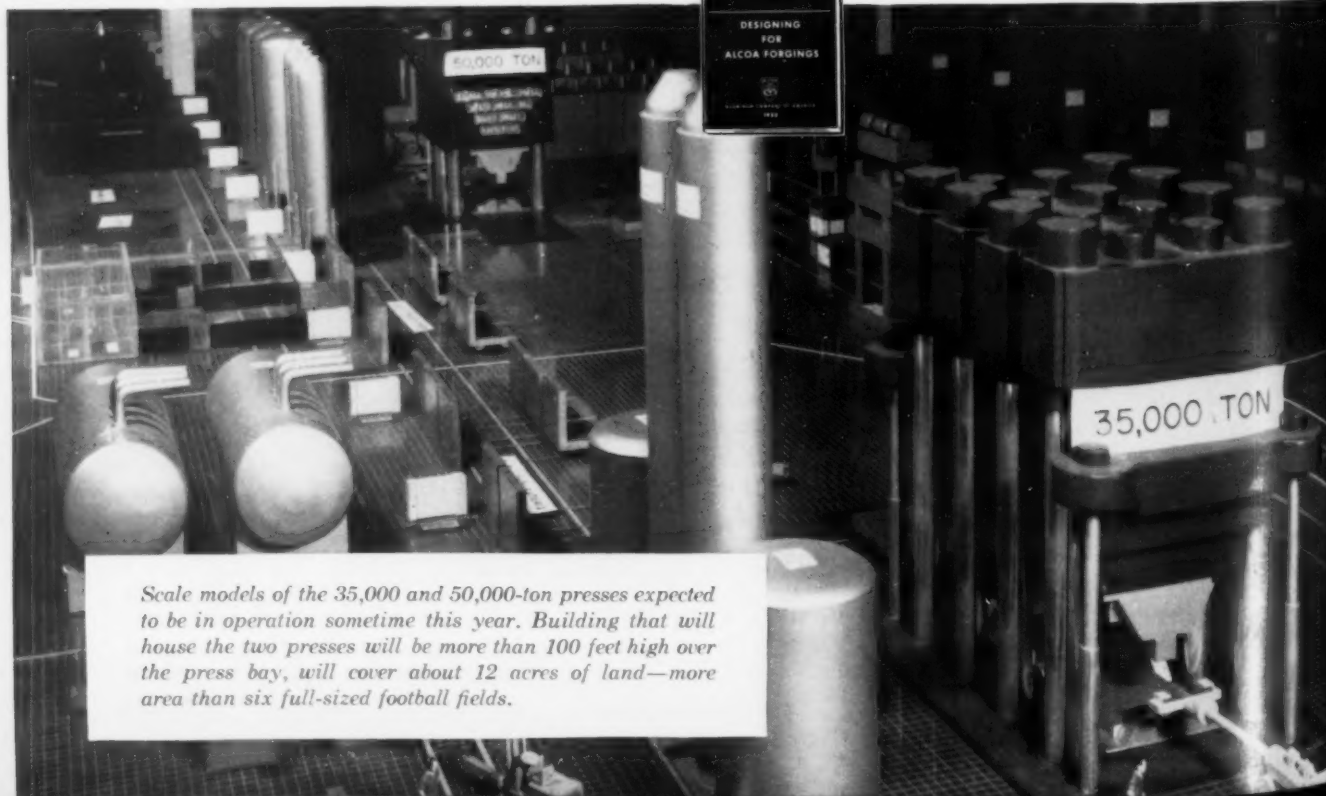
Want more information?

There just isn't space here to cover all the details you want to know about Alcoa Forgings. Should you desire more information about design, machining, or finishing, write on your company letterhead, telling us your job function, to ALUMINUM COMPANY OF AMERICA, 1993-C Alcoa Building, Pittsburgh 19, Penna. We'll be glad to send you the fact-filled book, *Designing for Alcoa Forgings*, a book you and your designers can put to good use now. Or, for more about finishes, ask for your copy of the book, *Finishes for Alcoa Aluminum*.

If you have an aluminum forging problem that needs immediate attention now, contact your local Alcoa sales engineer. His office is listed under "Aluminum" in the classified section of your telephone directory. Whether you plan on buying Alcoa Forgings today or a year from today, don't hesitate to use his time and talents freely. That's his job.



ALCOA ON TV brings the world to your armchair with "SEE IT NOW" featuring Edward R. Murrow, Tuesday evenings on most CBS-TV stations.



Scale models of the 35,000 and 50,000-ton presses expected to be in operation sometime this year. Building that will house the two presses will be more than 100 feet high over the press bay, will cover about 12 acres of land—more area than six full-sized football fields.

DEEP DRAWS

that highly desirable characteristic—the ability to take deep draws and intricate shapes without wrinkling or splitting—is one that you'll find in Weirton hot-rolled strip steel.

Careful control from mine through mill, and the use of the most up-to-date equipment and techniques, are what give Weirton hot-rolled strip steel the qualities that deliver the desired results under the most exacting conditions.

Next time you have a design that calls for a hot-rolled strip that can easily take deep draws—call Weirton and be sure.

hot-
rolled
strip
steel

from

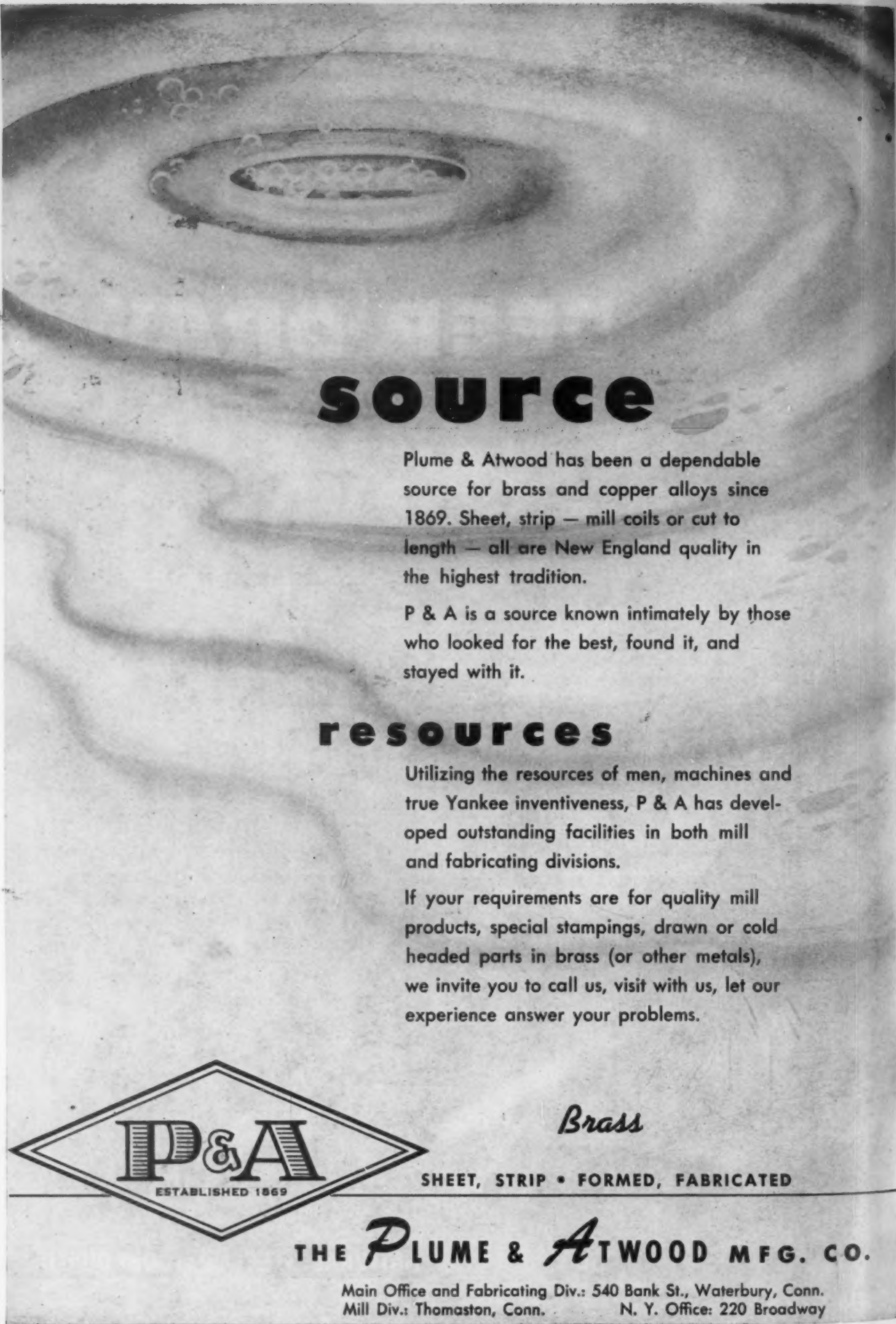
WEIRTON STEEL COMPANY

Weirton, West Virginia



NATIONAL STEEL CORPORATION





source

Plume & Atwood has been a dependable source for brass and copper alloys since 1869. Sheet, strip — mill coils or cut to length — all are New England quality in the highest tradition.

P & A is a source known intimately by those who looked for the best, found it, and stayed with it.

resources

Utilizing the resources of men, machines and true Yankee inventiveness, P & A has developed outstanding facilities in both mill and fabricating divisions.

If your requirements are for quality mill products, special stampings, drawn or cold headed parts in brass (or other metals), we invite you to call us, visit with us, let our experience answer your problems.



Brass

SHEET, STRIP • FORMED, FABRICATED

THE *P* LUME & *A* TWOOD MFG. CO.

Main Office and Fabricating Div.: 540 Bank St., Waterbury, Conn.
Mill Div.: Thomaston, Conn. N. Y. Office: 220 Broadway

For HYDRAULIC presses, too...

it pays to specify BLISS



At Willys Motors, Inc. Wilson Foundry Division
Pontiac, Michigan

9 BLISS HYDRO-DYNAMIC PRESSES give fast, versatile production of 90 mm. cartridge cases

Wilson relies on a battery of nine Bliss Hydro-Dynamic presses to keep 90 mm. cartridge case production rolling. In all pre-cupping, drawing, pre-heading, heading and tapering operations, their range of 100- to 2500-ton Bliss presses has proved fast, versatile and easy to work with.

And that's true not only in armaments, but in the aeronautical, automotive and other industries as well: more and more firms find that the Bliss Hydro-Dynamic presses offer the speed, versatility and accuracy they need. For complete information about the many standard and special-purpose Hydro-Dynamic presses, write or wire for copies of our 36-page Catalog 30-A.

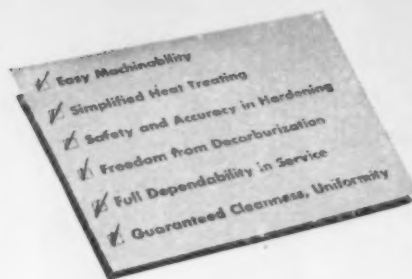


BLISS

on your press is more than a name... it's a guarantee

E. W. BLISS COMPANY, Canton, Ohio
PRESSES, ROLLING MILLS, SPECIAL MACHINERY

Subsidiary: The Die Supply Company, Cleveland, O. • E. W. Bliss (England) Ltd., Derby • E. W. Bliss Company (Paris) France
U. S. Plants in Canton, Salem and Toledo, Ohio; Hastings, Michigan; and San Jose, Calif. Branch Offices in Chicago, Cleveland, Dayton, Detroit,
Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. West Coast Representatives: Moore Machinery Co.,
Los Angeles and San Francisco; Star Machinery Company, Seattle. Other representatives throughout the world.

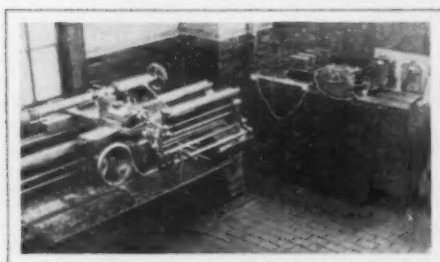


Now... Picture these Advantages

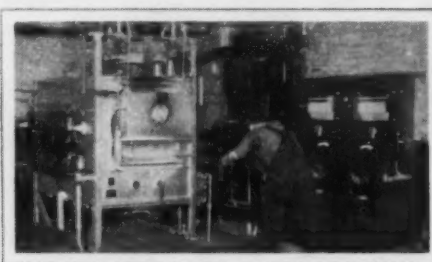
Make this 3-Minute Check... Discover what has been put into a dependable die steel to help you get better die performance, lower costs!

Improving existing die steels and developing new ones to meet the need for lower production costs, has been a challenge met by Carpenter. The results are modern die steels that heat treat and machine easier to save time and

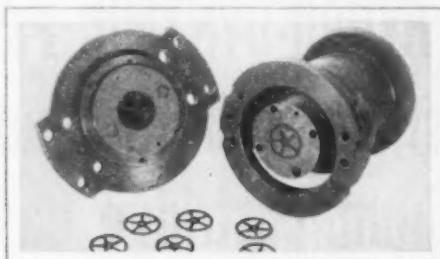
Here is what Stentor gives you...



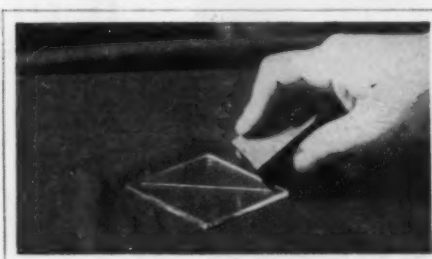
Easy Machinability. Two steels were put through this machining test. One, a well-known oil-hardening tool steel; the other, *Stentor* with its simplified analysis. Bars tested were 3 1/4" rd. with same Brinell hardness and structure. Result: With a cut .020" deep, *Stentor* proved to be 11% easier to machine than the other steel.



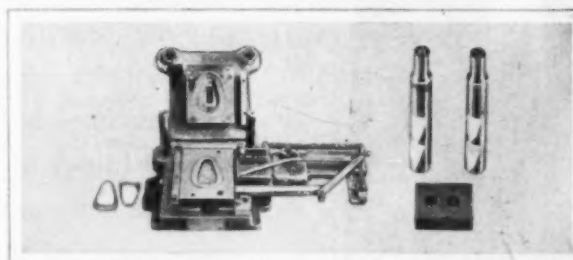
Simplified Heat Treating. Because of *Stentor's* simplified analysis, it hardens from the low temperature of 1420° to 1450°F. This low temperature reduces dangers of size change and decarburization—holds warp to an absolute minimum.



Safety and Accuracy in Hardening. This punch and die blanks 1.342" dia. timing mechanism gears having 120 teeth/90 pitch, made from 24 ga. 1/4-hard brass. Customer reports: "In heat treatment the *Stentor* die moved only .0005" on the max. dia. of the gear!"



Freedom from Decarburization. Here is a *Stentor* part as quenched and before drawing, showing absence of soft skin. This test proves that *Stentor* tools when properly hardened are hard enough, right on the surface, to scratch glass!



Full Dependability in Service. Here are just two examples of the job *Stentor* does day after day in service. Die on left gave 83 continuous hours of production between grinds compared to 10 hours with a chrome-tungsten grade! The 1/4" dia. punches shown to right above punch 1/4" thick SAE 1020 steel. After *Stentor* was used production went up 160%.

GET IMMEDIATE DELIVERY... Call your Carpenter Mill-Branch Warehouse, Office or Distributor.



If you are not getting *all* of these advantages from the steel you use, you're missing a big opportunity to cut costs, raise output!

For YOUR Tools and Dies !

money; run longer between grinds to reduce unit costs. Here are facts about *Stentor* (Oil-Hard) Die Steel—one of 12 modern steels in Carpenter's well-known Matched Set. Check what *Stentor* offers . . . compare it point by point with the die steel you now use. We believe you'll agree: Here is a real opportunity to put your tooling ahead of competition, take a big step to high quantity output at reduced unit costs.

*In the next 60 seconds
you can prove to yourself how a
dependable die steel can give you
Definite Savings in die-making
and on the job!*

COMPARE it with the die steel you use . . .

*Does the steel you use
provide this extra economy
in machining?*

On job after job, *Stentor's* simplified analysis, free of hard-to-machine alloys, has proved it can save plants as much as 10c on every dollar spent machining tools and dies!

*Is the steel you use as easy
and uncomplicated to harden
as this?*

Without preheating, you place the cold *Stentor* tool right in the hot furnace and let it heat "naturally" until it reaches furnace temperature. Soak an additional 5 minutes per in. of thickness, then quench in oil. This saves time, trouble—it is the *safest* procedure—and it gives you better tools.

*Will the oil-hardening steel
you are using
behave in hardening like this?*

A test specimen of *Stentor* 1" lg. expands only about .001" when hardened, but upon drawing between 300/400°F, it returns to within about .0004" of original length!

*Is the steel you use
subject to troublesome
surface decarburization?*

Discover what real freedom from decarburization can mean. On one job, involving a chrome-tungsten grade for blanking delicate .0063" ga. aluminum pointers, considerable trouble was encountered because of surface decarb. With *Stentor's* full-hard surface after hardening, the job is now produced in quantity, at a profit.

*Can you be sure of full dependability,
freedom from worry, when you put your
oil-hardening dies in service?*

Stentor's cleanness and uniformity is checked by 100% hot acid etch and its excellent combination of hardness and toughness gives you full assurance of dependable, worry-free output.

change to **Carpenter**

Matched Tool and Die Steels

... modern die steels engineered to meet today's requirements!

THE CARPENTER STEEL COMPANY, 121 W. Bern St., Reading, Pa.

Export Department: The Carpenter Steel Company, Port Washington, N. Y.—"CARSTEELCO."



March 25, 1954



Cuts Rejects

Lessens Severe Die Wear

Reduces Machine Down-time

J&L Scrapless Nut Wire helps close production gaps

Even with the best equipment and know-how, your scrapless nut production is only as good as the wire you use.

For smooth production that makes every minute count, you can rely on J&L scrapless nut wire. Quality controlled in every phase of manufacture, J&L scrapless nut wire gives you the best in—

- SURFACE QUALITIES
- WORKABILITY
- UNIFORMITY
- FINISH

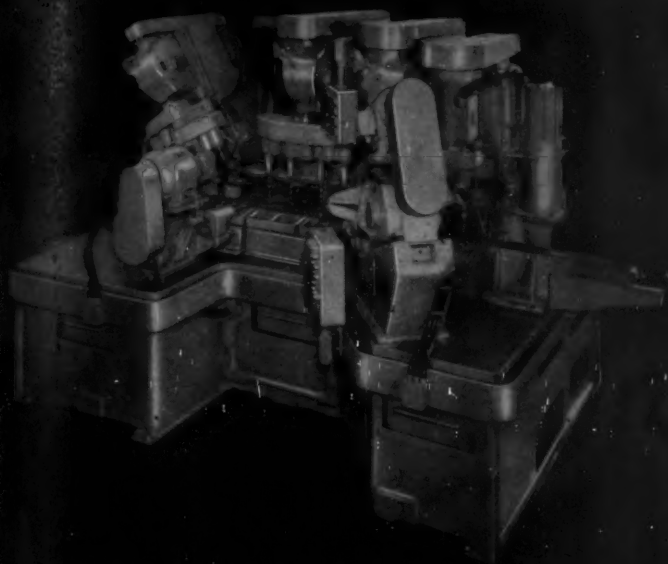
Down-time is costly—keep it to a minimum and boost your overall production of a better finished product with J&L scrapless nut wire. Remember—wherever you're located, you'll find the J&L representative near you can help show the way to fewer rejects, less die wear and less machine down-time. Call him today or write: Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pa.

Jones & Laughlin

STEEL CORPORATION — Pittsburgh



J&L SCRAPLESS NUT WIRE—TOPS IN QUALITY...COMPETITIVE IN PRICE



AUTOMATIC DRILLING & TAPPING MACHINES

of the Transfer type provide maximum automation for multiple operations. Hartford Special's custom engineered features assure top efficiency and economy in high production. For the best buy in the long run consult Hartford Special — new, detailed bulletin available on request.

Other Hartford Special production equipment includes Automatic Thread Rollers and Super-Spacers, the world's finest indexing device.

when

it

comes

to

production...

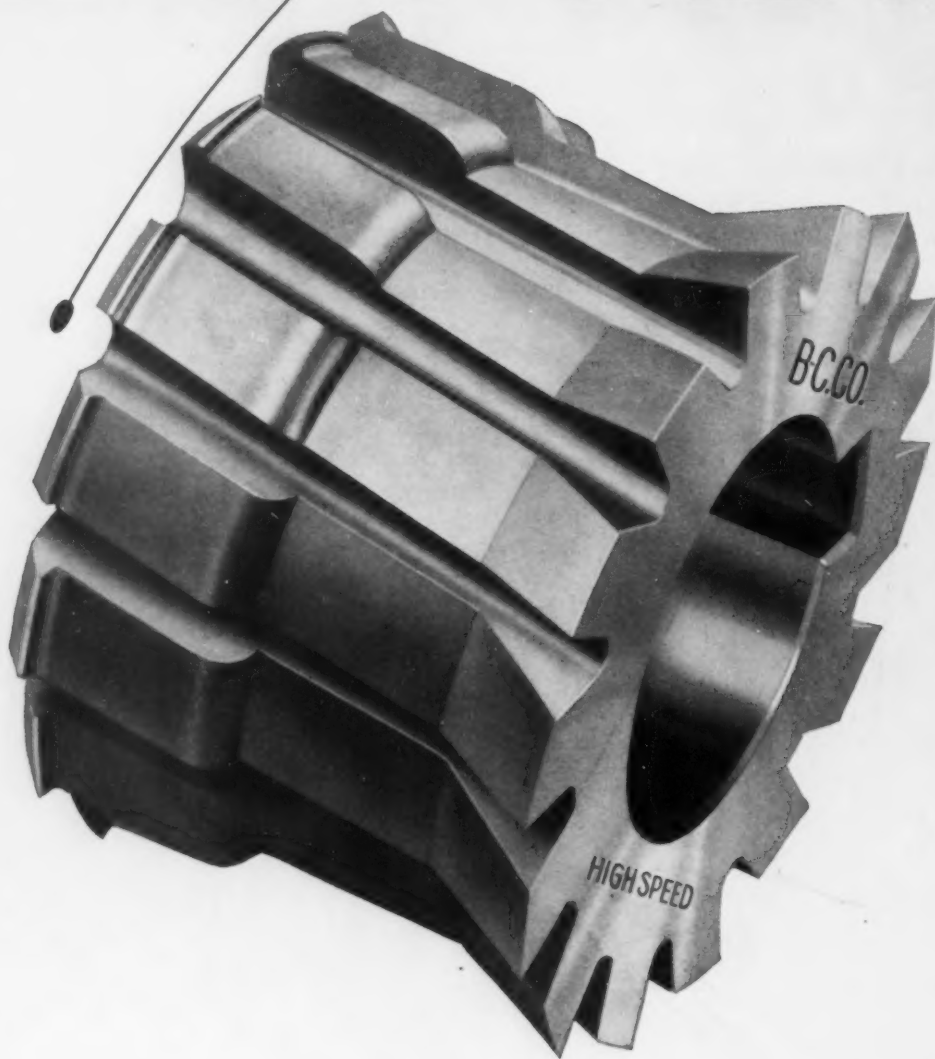
come to

HARTFORD
Special

THE HARTFORD SPECIAL MACHINERY CO.
HARTFORD 12, CONN.

Barber-
Colman

FORMED CUTTERS



*designed for
peak milling
efficiency,
consistent
form
duplication,
accuracy and
long cutting
life*

Cutters specially designed and manufactured for your form milling operations give you greater cutting efficiency, the most practical means of combining cuts, and reduced milling costs. Depending upon the accuracy you require, these cutters can be furnished with either ground or unground form.

Barber-Colman uses new manufacturing controls and production equipment to give you the most accurate, long-lived formed milling cutters available.

For your special form* milling requirements, call a Barber-Colman cutter specialist. He will be glad to assist you with your particular production needs.



Barber-Colman Company

GENERAL OFFICES AND PLANT, 833 ROCK STREET, ROCKFORD, ILLINOIS

Specialists in
milling cutters,
profile or formed,
ground or unground
thread milling,
special problems

BIG

MANIPULATOR

Alliance MANIPULATOR

INCREASES PRODUCTION FROM 200 TO 400%

This 75-ton Alliance Manipulator is the world's biggest. It handles ingots for ship shaftings . . . press columns, large naval gun barrels and other huge jobs.

At the International Nickel Company plant in Huntington, West Virginia, two 4-ton straight line Alliance Manipulators serve a single hammer . . . forging Monel metal ingots from 14"x14" down to 8"x8". They helped boost 8 hours' production to 250% of the former record capacity with less than half the number of men.

Alliance builds forging manipulators in capacities from 1 to 75 tons in the following types . . . straight line trolley only, straight line trolley with bridge, sluing trolley type, sluing trolley type with bridge and crane type. Some bridge type manipulators handle the entire job—charging, forging, discharging and delivering.

Users of Alliance Machine Company Manipulators report 200 to 400% increased production with a smaller crew.

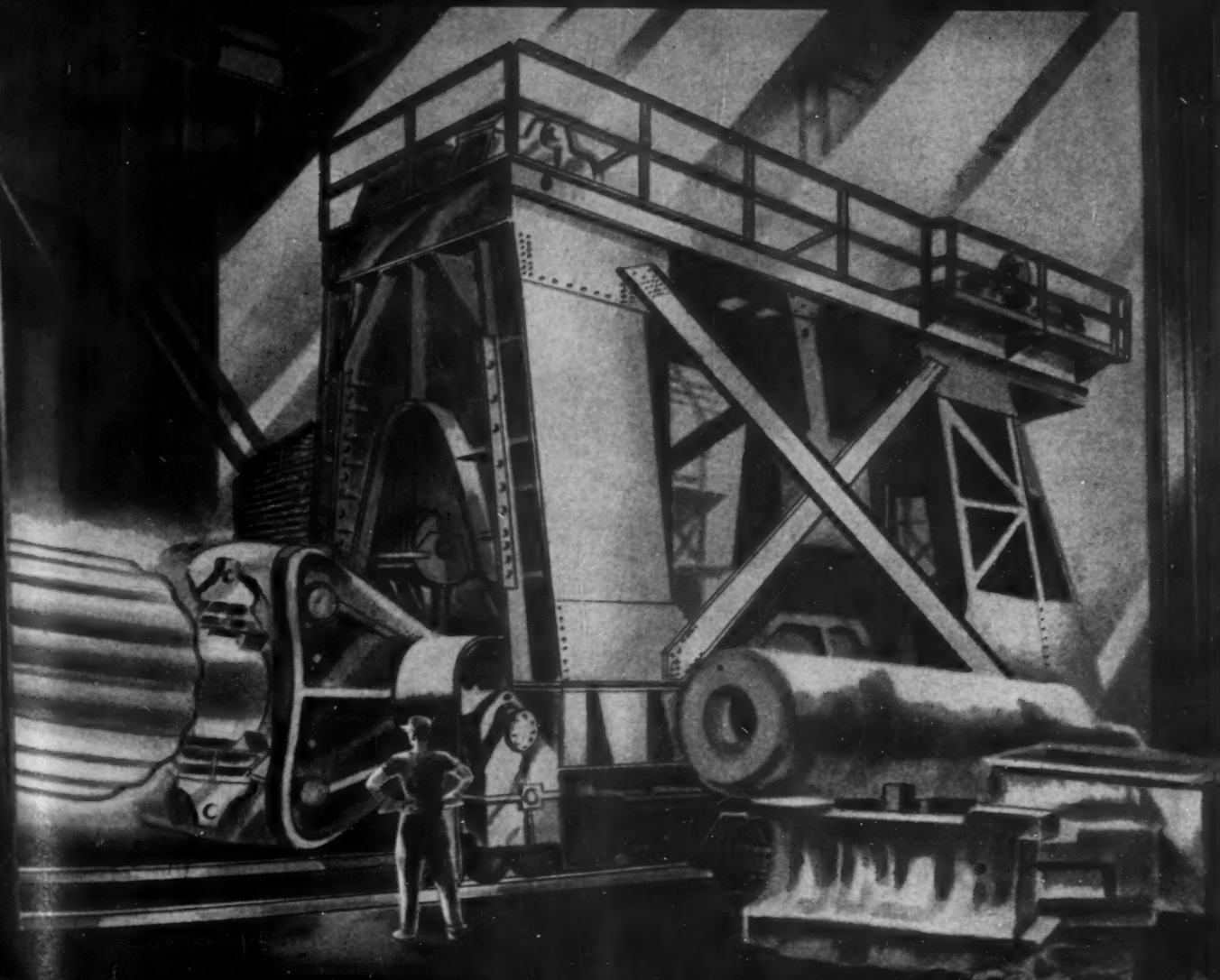
If you are not using Alliance Manipulators now, you can increase production and save money by writing us today.

THE *Alliance* MACHINE COMPANY

Main Office: Alliance, Ohio

LADLE CRANES • GANTRY CRANES • FORGING MANIPULATORS • SOAKING PIT CRANES
STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING
MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATION • COKE PUSHERS

Give Us The Runway And We'll Lift The World



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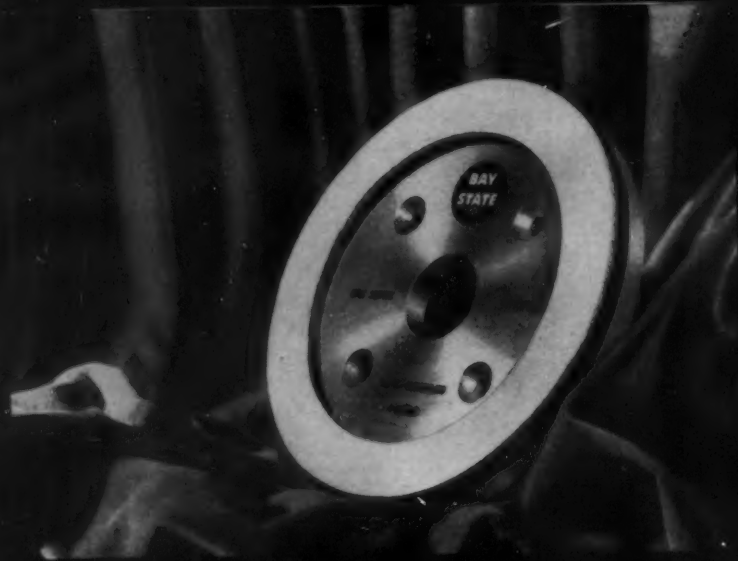
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Bay State Diamond Wheels



...for ANY "ENGAGEMENT"!

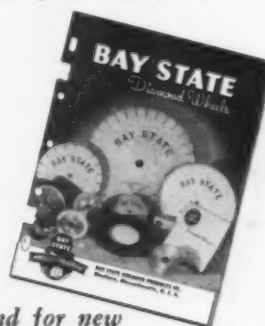


Engagements, diamonds, and life-time bonds have long been partners. So have BAY STATE, and "Grinding Wheel Progress".

The latest sparkling development is BAY STATE'S new Vitrified bond which holds *every* diamond particle until the last bit of its cutting ability is used.

Results: More uniform cutting rates, greater efficiency per unit of abrasive, still longer wheel-life, and . . . more grinding wheel progress by BAY STATE!

Besides this progressive step in bonds, we have ample stocks of diamond bort, and outstanding abrasive engineering service. Together, these make BAY STATE a most reliable source of all your diamond wheel needs . . . in all bonds; vitrified, metal, or resinoid.



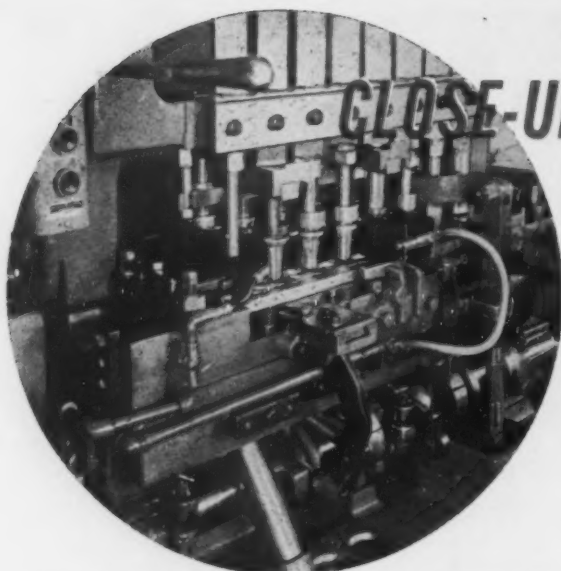
Send for new
Diamond Wheel Handbook
which includes net prices.

Manufacturers of all types of Quality Abrasive Products

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass., U. S. A.

Branch Offices and Warehouses — Chicago, Cleveland, Detroit, Pittsburgh
Distributors — All principal cities

In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ont.



CLOSE-UP of versatile mass-production ability **Waterbury Farrel EYELET MACHINES**

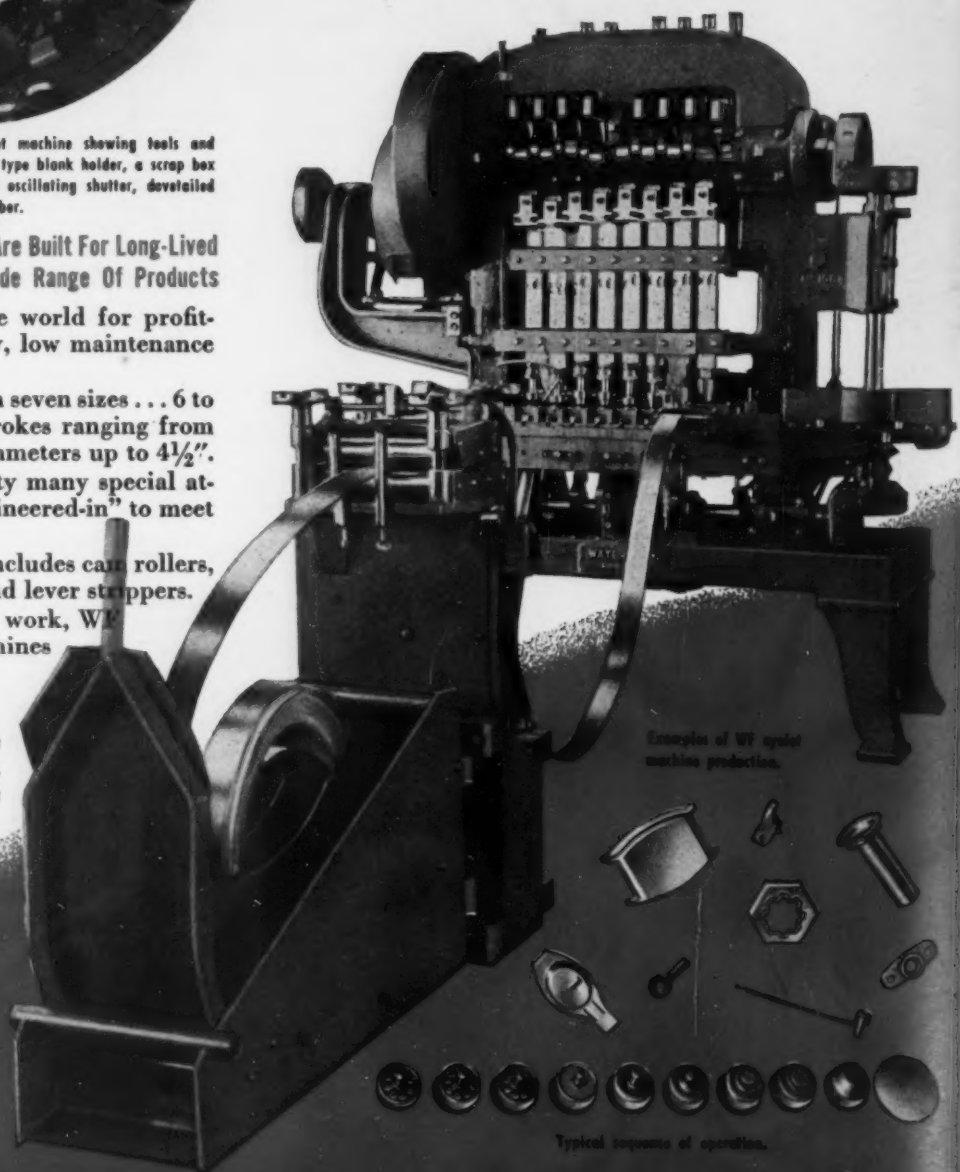
Close-up of an 8-plunger WF cam eyelet machine showing tools and special attachments. Included are a lever type blank holder, a scrap box fitted with a compressed air blower and oscillating shutter, dovetailed punch holders and a hook type side stabber.

WF Multiple Plunger Presses Are Built For Long-Lived Automatic Production Of A Wide Range Of Products

- Known throughout the world for profit-making, high efficiency, low maintenance performance.
- Cam type is available in seven sizes . . . 6 to 12 plungers . . . cam strokes ranging from $1\frac{1}{4}$ " to 6" . . . blank diameters up to $4\frac{1}{2}$ ".
- For increased versatility many special attachments can be "engineered-in" to meet specific needs.
- Improved WF design includes cam rollers, friction clutch drive and lever stoppers.
- For a heavier range of work, WF crank type eyelet machines are available in five standard sizes.

Write today for complete free information on cam or crank eyelet machines or on any of the WF equipment listed below.

Like WF production unit includes roll box and straightener feeding into an 8-plunger cam eyelet machine.



WATERBURY FARREL FOUNDRY & MACHINE CO. • WATERBURY, CONN.

Offices: Chicago, Cleveland and Millburn, N. J.

POWER PRESSES — Crank, Cam and Toggle; also Rack and Pinion Presses • Eyelet Machines • Multiple Plunger Presses • Horizontal and Hydraulic Presses, etc. **MILL MACHINERY** — Rolling Mills; Strip, Rod, Wire Flattening, (For Ferrous and Non Ferrous Metals) • Also Slitters • Straighteners • Cut-off Saws • Coilers • Winders, etc. **WIRE MILL EQUIPMENT** — Continuous Wire Drawing Machines (Upright Cone and Tandem) • Wire Flattening Mills • Chain Draw Benches • Pointers • Swagers • Bull Blocks • String-up Machines • Spoolers, etc. **COLD PROCESS BOLT & NUT MACHINERY** — Headers (all types) • Rivet Machinery • Trimmers • Thread Rolling Machines • Slotters • Nut Formers and Tappers, etc.



THIS IS AN OIL-FIRED FURNACE used for sharpening drill bits. The dull bits go into the right hand opening and are heated for 30-40 minutes at 2000-2100 F. Then they are dressed, and returned to the left hand opening for tempering — about 30 minutes at 1450 F. The bits run 6"-8" in diameter, up to 5' in length, and weigh about 450 lbs each.

IF REFRACTORY "A" OUTLASTS "B" 4 TO 1

How Do You Figure Their Relative Costs?

The operator of this forge furnace solved a similar problem approximately as follows: He figured the cost of down-time for a furnace rebuilding job . . . plus labor costs . . . and added the price of the refractories. Then by multiplying the total cost of the short-lived material "B" by four, he had a direct comparison. Result: he shifted from standard firebrick to a super refractory.

The "A" material that lasts four times as long, is CARBOFRAX® silicon carbide refractory. It's used in the side-walls, backwall and main arch of this furnace. When pictured, these refractories had already been in service 10 months, 12-13 hrs/day, 6 days/week. And they were still good for many weeks more. In contrast, when clay was used it lasted less than three months — and, of course, the furnace often needed rebuilding when in greatest demand.

Figure the difference. It has meant savings here. It can mean savings to you. The greater abrasion resistance, heat shock resistance, and other durable properties of CARBOFRAX brick add up to a refractory that *wears, and wears, and wears*. As a starter, send for "Super Refractories in Heat Treatment Furnaces." No obligation, of course.



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Dept. B-34, Refractories Division
The Carborundum Co., Perth Amboy, N. J.
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● The Manufacturers Trust Company building at Fifth Avenue and Forty-Third Street in New York is a fine example of modern design. Architects: Skidmore, Owings & Merrill. General Contractors: George A. Fuller Company. Structural Engineers: Weiskopf & Pickworth.

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Ingalls, the nation's leading independent steel fabricator, supplied the steel for the handsome, modern Manufacturers Trust Company building in the heart of America's largest city.

Thousands of commercial and industrial buildings, constructed during the past 44 years and located here and there about the country, are proof that Ingalls can meet any fabricated steel requirement, regardless of size or location. Plants in Pittsburgh, Birmingham, Pascagoula, Mississippi, and Decatur, Alabama, assure *you* of a service that's prompt, efficient and economical.

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OHIO FORGE AND MACHINE



eliminates two grinding operations

machining high precision diesel engine gear blanks

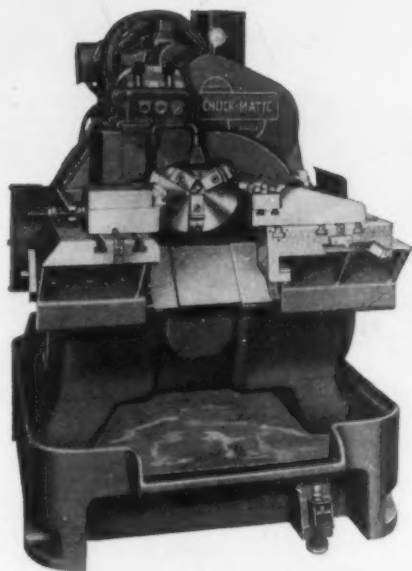


Machined on CHUCK-MATIC from A-4340 steel forging annealed.

1st operation: (on front side) Face hub and flange, form radius on O.D; bore and chamfer hole, turn O.D. partway.

2nd operation: (on other side) Face, finish bore and turn O.D. remainder.

ON ACME-GRIDLEY CHUCK-MATICS



Acme-Gridley 12" Single Spindle CHUCK-MATIC is radically different from any other machine heretofore offered for short length primary operations such as forming, turning, drilling, straight or taper boring, facing, etc.

By switching these jobs to Chuck-Matics, Ohio Forge and Machine Corporation in Cleveland, Ohio, now machine tough forged blanks concentric within .0002"—hold tolerances which eliminate the green (or soft) grinds previously required on bore and O.D. before the teeth could be cut.

And they save, too, with automatic control of cycle time—a predetermined machining rate that you can count on for every piece.

This Radically Different Chucker

is built for high speed precision work on heavy duty jobs. Check these features against your present methods—

- automatic control of machine time cycle
- easy to set up and retool
- does not require skilled labor—one man operates as many machines as cycle times of jobs permit
- is space saving—only 45" wide, 64" long
- precision work at speeds and feeds as fast as carbide tools can take it.

—then write for catalog SC-46. Or, better still, ask us to talk it over.

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ACME-GRIDLEY BAR and CHUCKING AUTOMATICS
1-4-6 and 8 Spindle • Hydraulic Thread Rolling Machines •
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more manufacturers
are using

SW-15

electrodes

than ever before!

70%

5%

0

FASTEST GROWING ELECTRODE

The chart shows the increase, from 1950 through 1952, in shipments of electrodes. And the A. O. Smith SW-15 leads the industry's increase by 13.2 times!

ALL ELECTRODES... 5%

SW-15... 69%

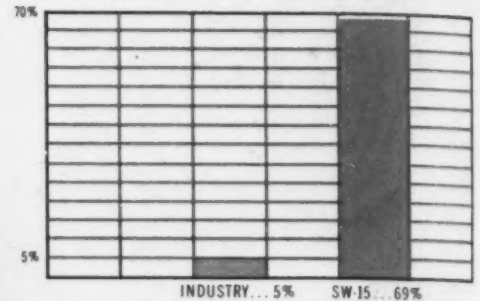


more manufacturers are using SW-15 electrodes than ever before!



SW-15

the UNIVERSAL Electrode



Here is the evidence of SW-15's growing acceptance among manufacturers who depend on welding in the fabrication of their products. SW-15 showed a 69% increase in acceptance and use, as compared with but 5% for all electrodes produced by the welding electrode industry from 1950 through 1952.

A few of the principal users of SW-15 are:

J. D. Adams
Allis-Chalmers
E. W. Bliss
Caterpillar
Chicago Bridge & Iron
Fruehauf Trailer
Graver Tank & Mfg. Co.
The Heil Company
Illinois Central Railroad
Ingersoll Rand
Iowa Iron & Steel
Kansas City Structural Steel
Link Belt Speeder
Omaha Steel
Pullman Standard Car
Santa Fe Railroad
Sheffield Steel
Trackson Company

Others are joining these every month to share the many benefits which the SW-15 electrode provides their welding operations.



SW-15 was developed as a universal type electrode which could be used for an extremely large number of welding applications. There is nothing else like it among mild steel welding electrodes!

It performed its first welding job in 1939, when it was taken into the field to weld refractory towers and sustaining structures usually welded with an E6010 electrode. It bettered the standard welding

time by 50%! Its unusual ease of manipulation won over welding operators and management at once. New operators were readily trained with the SW-15. Its x-ray quality set new inspection records.

Two years later, SW-15 was welding on E6012 applications in the farm machinery and heavy road equipment fields. Excellent weld appearance, easy slag re-

moval, little spatter, good bead with no undercut helped improve the products of these manufacturers.

Manufacturers found that due to SW-15's ease of manipulation, operators avoided slag inclusions, fish-eyes and voids, even in welds made in the field. This greatly improved the appearance of products it was used on and enhanced the reputation of the SW-15 electrode.

SW-15 is just one of the welding electrodes in the A. O. Smith line. There's an A. O. Smith electrode for every welding requirement:

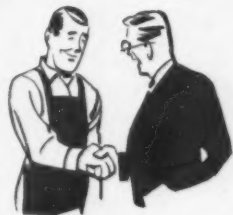
MILD STEEL		HIGH TENSILE		LOW HYDROGEN		STAINLESS		STAINLESS	
AWS Class	A. O. Smith	AWS Class	A. O. Smith	AWS Class	A. O. Smith	AISI Class	A. O. Smith	AISI Class	A. O. Smith
E6010	SW-10	E7010	SW-75	E6016	SW-64	502	SW-151	310	SW-359
E6011	SW-14	E7010	SW-80	E6016	SW-65	505	SW-152	310	SW-169
E6012	SW-11	E7020	SW-76	E7016	SW-84	410	SW-153	310	SW-168
E6012	SW-17	E8013	SW-86	E8016	SW-81	430	SW-154	310	SW-368
E6013	SW-15	E9010	SW-95	E9016	SW-90	308	SW-162	316	SW-160
E6013	SW-16	E9013	SW-87	E9016	SW-89	308	SW-362	317	SW-161
E6020	SW-35	E10013	SW-88	E10016	SW-100	309	SW-166	318	SW-158
		E10020	SW-101	E12015	SW-120	309	SW-167	347	SW-157
				E12016	SW-103	310	SW-159	347	SW-357

THE ONE MILD STEEL ELECTRODE *no other can match!*



...in ease of handling

SW-15 is easy for operators of varying skills to use in all positions. Its smoother arc, self-cleaning slag, lack of spatter and freedom from undercutting makes it easy for anyone to produce good looking, sound welds with the least effort!



to impact desirable, and became large users. Field erectors of vessels and structures adopted SW-15 after testing its speed, ease of application, and x-ray quality in weldments. Every year, more manufacturers turn to the SW-15 electrode to spur production and improve the quality of their welded products.

...in quality of weldments

SW-15 welds have high-strength, high-yield, good ductility and consistent x-ray quality. This extends its use to welding low alloy, high tensile steels such as corten and manten, impossible for electrodes whose physicals can't compete with those found consistently in SW-15 welds.

...in appearance of welds

SW-15 bead appearance is excellent. Operators become more quality conscious, inclined to turn out better welding jobs when they can put in good looking welds so easily. Fine appearing welds aid in the ultimate sale of welded products, build acceptance not otherwise obtainable!



...in cutting costs

SW-15 is in a class by itself. Elimination of time-consuming slag removal, absence of spatter to be cleaned up, ease and speed of application by any operator, freedom from undercutting, excellent weld appearance that reduces inspection costs, and avoidance of weld repairs, all lower production costs directly. Then, the freedom from worry over possible field failures tops off these reasons for the tremendous use of SW-15 electrodes.

...in your plant

SW-15 has a use in your plant or shop. May we suggest that you write us or contact your local A. O. Smith Distributor for full details and a chance to test this remarkable mild steel electrode.

...in usefulness

SW-15 has an unparalleled history of success in many fields. Shipyards, during the war, cut their welding time as much as 50% by actual test and used millions of pounds of SW-15. Farm and construction equipment builders found its ease of application and high resistance



A.O. Smith

CORPORATION

WELDING PRODUCTS DIVISION

Milwaukee 1, Wisconsin

INTERNATIONAL DIVISION: MILWAUKEE 1, WISCONSIN



with no
products

SW-15's
avoided
ds, even
greatly
ducts it
putation

ESS
A. O.
Smith

SW-359
SW-169
SW-168
SW-368
SW-160
SW-161
SW-158
SW-157
SW-357

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with rated outputs from 180 to 1400 amps.



A.C. "CHAMPION"



A.C. "CHALLENGER"



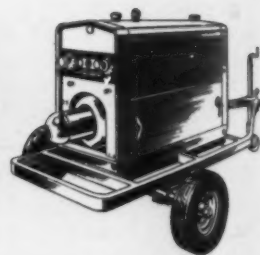
A.C. "AUTOMATIC"



A.C. "UTILITY"

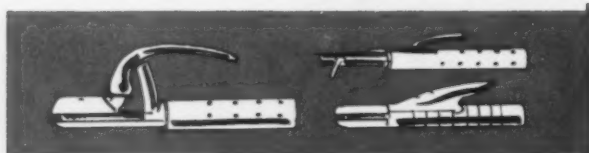


D.C. "RECTIFIER"



D.C. "FIELD KING"

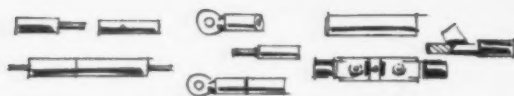
WELDING SUPPLIES



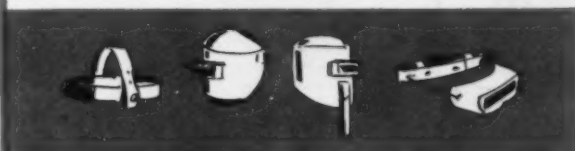
Electrode holders



Ground clamps



Cable, connectors, lugs, and splicers



Helmets, shields, headgear, and goggles



Cleaning tools, Electrode drying ovens



Protective clothing and gloves

*Simplify your welding
buying with*

ONE PURCHASE ORDER

A.O. Smith

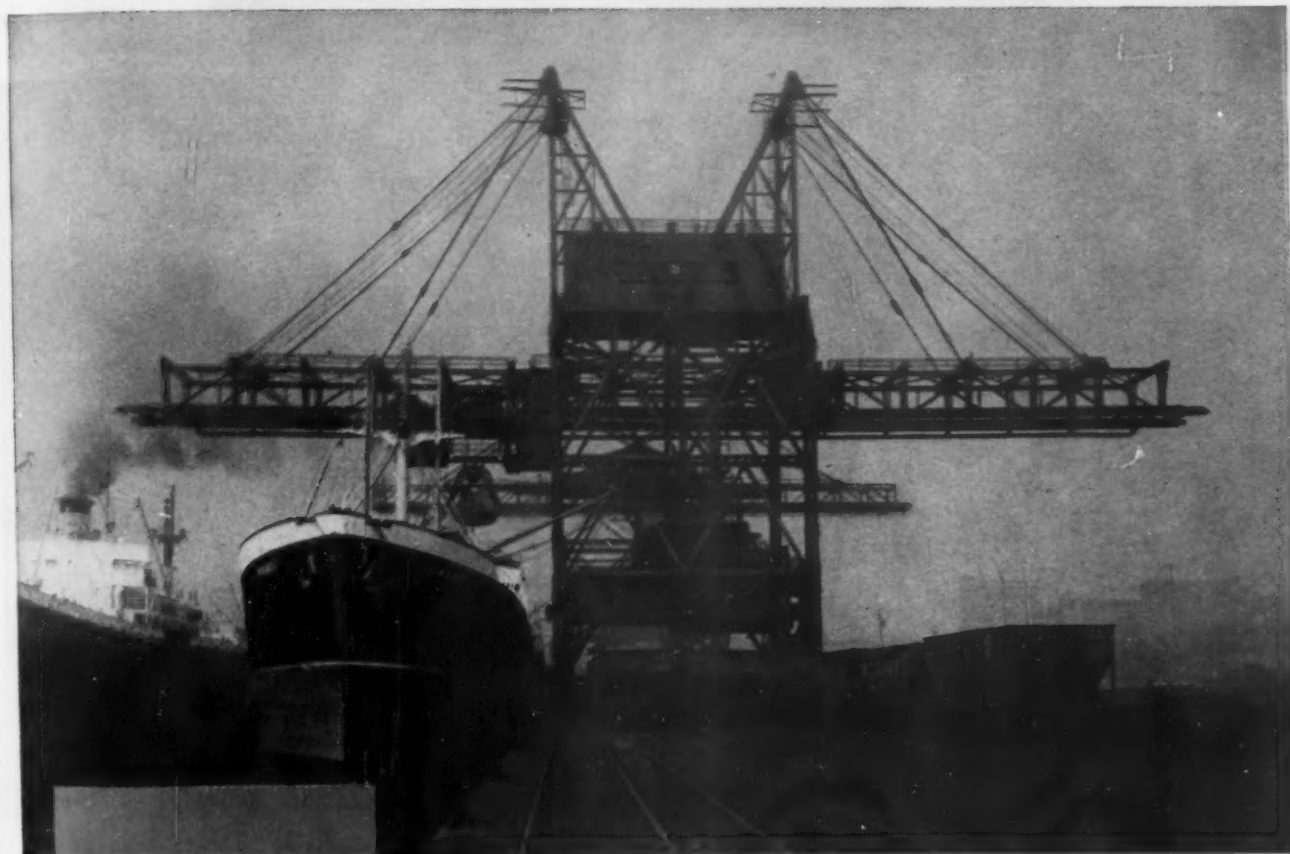
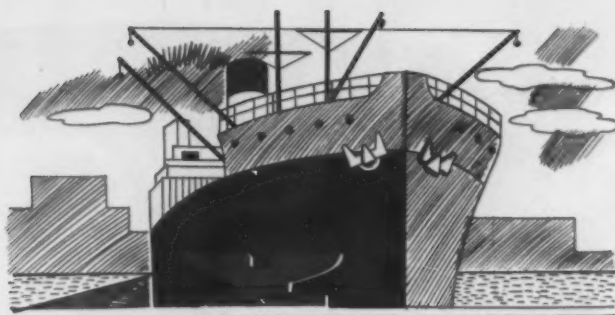
CORPORATION

WELDING
PRODUCTS
DIVISION

MILWAUKEE 1, WISCONSIN

INTERNATIONAL DIVISION: MILWAUKEE 1, WISCONSIN

**you can't show a
profit while the
cargo's in the boat**



**Brownhoist
equipment
speeds material
handling in ports
all over the world**

There's no profit in a shipment of bulk cargo until you get it out of the boat and put it to work for you. The quicker and cheaper you can do this, the bigger your profit will be. BROWNHOIST builds a variety of special equipment for handling bulk materials in large quantities rapidly and efficiently. The 15 gross ton boat unloader you see here, for example, can unload 1200 tons of ore an hour. It has a reach of 70 feet from the face of the dock on either side. The unloader is equipped with adjustable voltage control which gives extremely smooth operation and maximum production. BROWNHOIST also builds traveling bridge cranes, fast plants, storage bridges, car dumpers, locomotive cranes and clamshell buckets. Each machine is specifically engineered to do the job it is designed for as quickly and as economically as possible. For information about BROWNHOIST equipment to meet your requirements, consult your nearest BROWNHOIST representative or write us today.

BROWNHOIST

builds better cranes

175



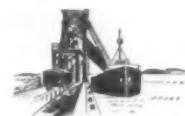
CLAMSHELL BUCKET



250 TON WRECKING CRANE



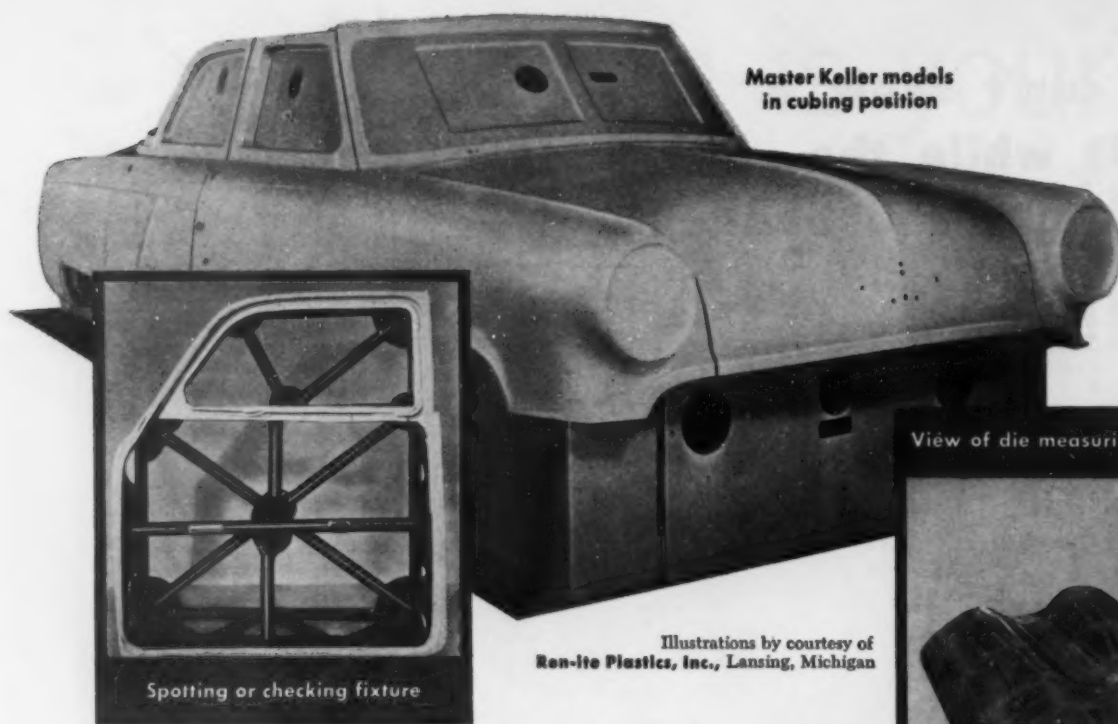
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INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, San Francisco, Chicago, Montreal, Q. • AGENCIES: Detroit, Birmingham, Houston, Los Angeles

March 25, 1954



Master Keller models
in cubing position

Spotting or checking fixture

Illustrations by courtesy of
Ren-ite Plastics, Inc., Lansing, Michigan

View of die measuring 36 x 44 inches



Low-Cost Key to Fast Model Changes—

PLASTIC JIGS, TOOLS, AND METAL-FORMING DIES

Reduction of tooling costs is a basic goal for the automotive and aircraft industries in 1954. A significant contribution to this program will come from the application of BAKELITE Epoxy Resins for metal-forming dies and fixtures.

These resins can be cast into dies without applied heat or pressure, using molds of glass, plaster, wood, or metal. Adding a special hardener converts the resin syrup into a thermosetting solid in a few hours at room temperature. Shrinkage is negligible. Minute mold details are accurately reproduced. The resulting tools are light in weight, with great impact, flexural, and compressive strengths, and excellent dimensional stability. They can be machined or patched when changes are needed.

Laminations of glass fabric and BAKELITE Epoxy Resin are readily constructed for high-strength, thin-walled fixtures such as spotting die racks, checking fixtures and Keller models. These devices are accurate and tough, will not check or crack, need no edge binding.

Bakelite Company manufactures epoxy resins and their hardeners. Because of the variety of requirements and formulations, address your problems to us for proper recommendations. Write Dept. TR-44.

BAKELITE

TRADE-MARK

EPOXY RESINS



TRADE MARK

BAKELITE COMPANY

A Division of
Union Carbide and Carbon Corporation

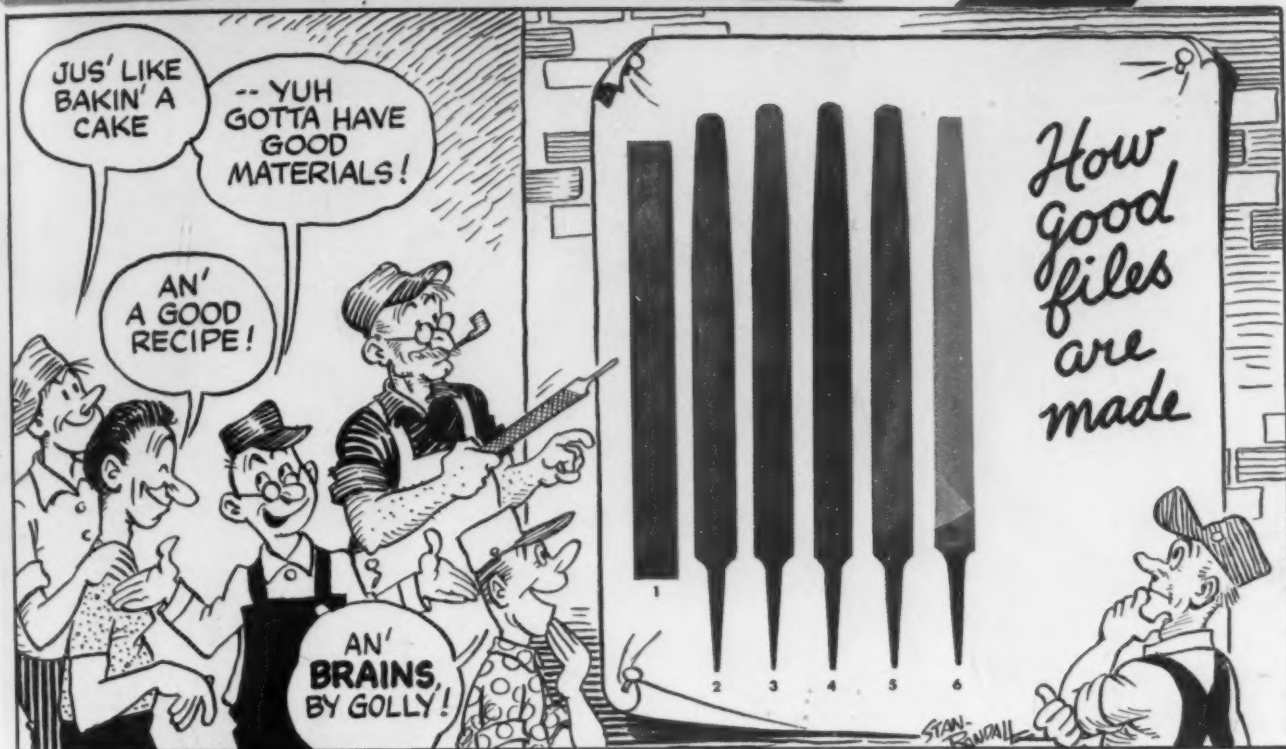
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NICHOLSON
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Making files of high and lasting quality, and of correct design for use on various kinds of materials and products, is a *science*. Nicholson manufacture goes far beyond the factory walls. It extends to the metallurgical laboratory, to the steel mills, to industrial plants where files are in constant or diversified use. Briefly, the steps embrace these important factors:

Steels are usually made to exacting specifications; come in bars of various cross-sections; are analyzed and tested; cut to working length (1).

Forging, with trip hammers, rollers and punches, shapes the body, point and tang into a "blank" (2).

Annealing, by heating that is laboratory-controlled for both degree and length, "conditions" the steel for uniform texture and for cutting.

Smoothing involves straightening the annealed blank, grinding to remove scale, and drawfiling to assure uniform teeth and even filing surface (3).

Cutting is done by Nicholson-perfected chisel-operating machines considered the most precise and efficient of their kind in the world. First operation (4) produces the overcut (single); second (5) the upcut.

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Finishing (6) includes such important details as: cleaning and sandblasting for extra sharpness of teeth; softening the tang; oiling to prevent rust; final-testing and checking to assure the most efficient, uniform and long-lasting files human skill and earnestness can produce.* That's why—

**Industrial Distributors are proud to offer you
Nicholson or Black Diamond files**

*FREE 48-PAGE BOOK, "File Philosophy," tells lots more about the manufacture, kinds, use and care of files.
Send for it. ➡



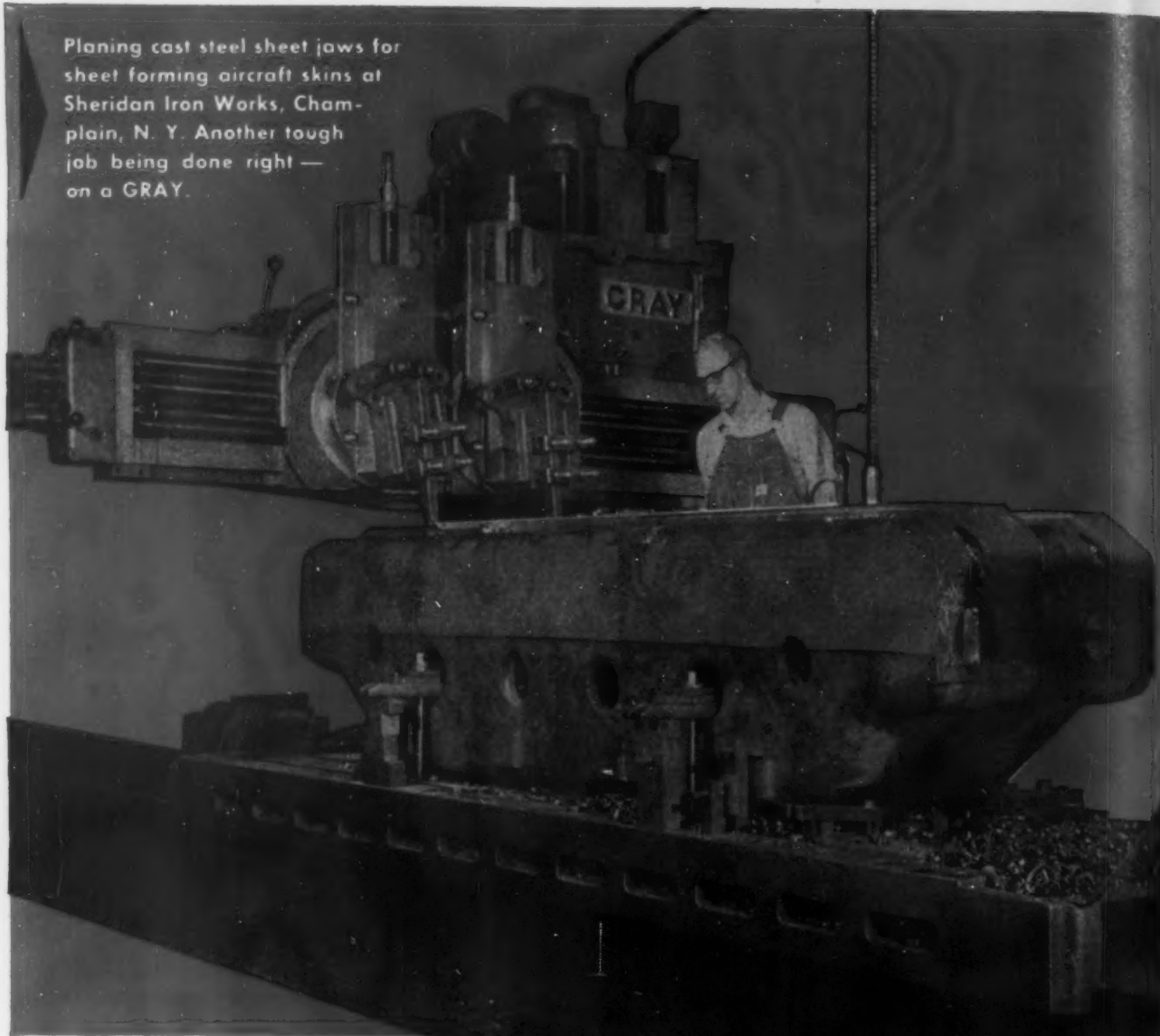
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planing with a GRAY heavy duty OPENSIDE PLANER

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HIGH
low cost
PRODUCTION

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a line of GRAY openside planers are delivering high production at low cost.

Everywhere, the odds are constantly increasing in favor of the GRAY.

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Get the benefits of substantial savings in time and money with a
GRAY heavy duty openside planer.

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planers • milling planers
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Here's a plan to cut costs...up production ...boost profits!

**Alemite power guns insure plant-wide bearing protection.
Save 23.9 man-hours for every 100 pounds of lubricant!**

Where an ordinary hand gun is drained in minutes, an Alemite power gun moves in, gives positive, fast, safe lubrication to hundreds of bearings without refilling. And power transferring and application effect amazing savings in time, lowered maintenance costs, and increased machine life!

Alemite power transferring is 63% faster than ordinary manual transferring methods. Lubricants are kept "refinery clean," fresh and effective. A big portable power gun can be filled in just about 60 seconds—no waste—no mess!

Alemite Portable Power Guns save 23.9 man-hours for every 100 pounds of lubricant used. But the big saving is in increased bearing life—longer operation of machines at peak efficiency. Alemite portable power guns go anywhere in the plant, navigate narrow aisles with ease, give the operator all the pressure he needs at his fingertips. And there is a portable power gun just right for your plant—just right for any type of lubricant from the lightest to the heaviest greases made. Available in both air and electric operated models—from 25 to 50 pound capacity.



With Alemite Plan "C" Only Clean Lubricant Reaches Machines

This combination of power transfer pumps and portable power guns is known as Alemite Plan "C." It is one of the five Alemite plans that your trained Alemite representative can show you. Ask him about the new, colorful, informative slide film, "No Margin for Error," which will help you and your men cut production costs. No obligation, naturally.

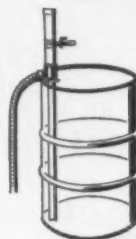
ALEMITE

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Ask Anyone in Industry



A 400 pound barrel of lubricant—any type—arrives at the plant oil room. It's sealed, fresh, "refinery clean."



The Alemite Power Transfer Pump is inserted in the drum. Lubricant stays sealed against dirt, grit, contamination.



In just 60 seconds a portable power gun is filled with lubricant that is still as fresh as when it left the refinery. No mess—no waste!



Now the portable power gun rolls anywhere in the plant on its big, easy acting wheels. Servicing hundreds of bearings with clean, safe lubricant!

New Booklet "5 Plans for Better Plant Lubrication"

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Please send me my copy of
"5 Plans for Better Plant Lubrication"



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March 25, 1954



Swaging Success Stories

Mandrel Swaging...for time and cost savings

Look at the savings!

1. Saving in time—swaging is fast, increases output.
2. Saving in labor—swaging can be done by unskilled labor.
3. Saving on machining—swaging reduces metal, does not cut it away wastefully.
4. Saving on rejects—the one piece tube is a generally better product than the assembly—has a better finish, better resiliency.



An informative booklet on swaging containing complete descriptions of Torrington Rotary Swagers is yours for the asking. Send for it today; it may save you money tomorrow.

See Torrington Swaging Machines in action.

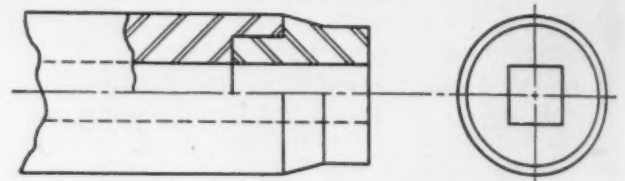
VISIT BOOTH 964

at the ASTE Industrial Exposition,
Philadelphia, April 26-30.

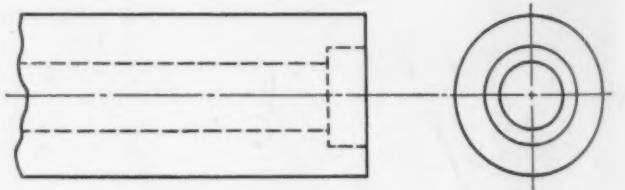
THE TORRINGTON COMPANY

Swager Department

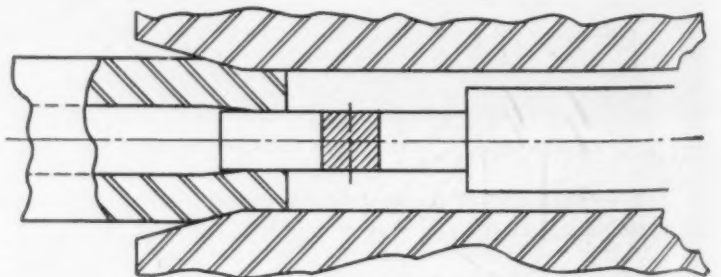
70 North Street, Torrington, Conn.
Makers of Torrington Needle Bearings



This connector tube has a 3/8" bore, and one end is fitted with a turned nose piece which has a 5/16" square broached hole to receive a square driving rod. The cost of the tube was greatly influenced by the cost of making and assembling the nose piece.



Torrington swaging experts were able to eliminate the assembly and turning of the nose piece by simply redesigning the blank tube.



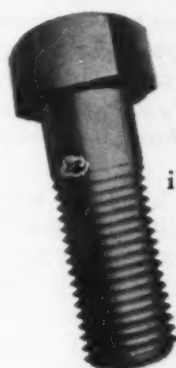
Result—one swaging operation over a square mandrel, and the piece was finished except for squaring up the end.

TORRINGTON ROTARY SWAGING MACHINES

the same ingredients—
sure . . .



but what a difference
in the results!



Take the same recipe, the same instructions—but different cooks. Ask each to bake a cake. Theoretically the *results* should be the same.

But are they? Seldom, if ever. The reason, of course, lies in that intangible something—that “feel”. Good cooks have it while others do not.

Bolts, nuts and screws, made by different companies, are also theoretically alike. Technically, they should be. But some brands are preferred over others. Where, then, lies the difference?

It's not easy to define. But we at Lamson &

Sessions like to believe it's an extra measure of helpfulness—a will to serve customers just a bit better than the other fellow—that makes the big difference.

Or maybe it's just that our personnel work harder to please you; or that Lamson engineers respond cheerfully and successfully in solving customers' fastener problems.

Perhaps we can summarize it by saying we try to do everything possible to make it more *pleasant* and *profitable* for folks to do business with us.

We feel that those intangible “extras” you get with every Lamson “bolt” are important . . . important to us and to you!

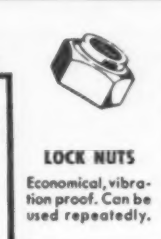


The LAMSON & SESSIONS Co.

1971 West 85th St. • Cleveland 2, Ohio

Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

FOR PROMPT DELIVERY AND HELPFUL SERVICE,
ORDER FROM YOUR LAMSON DISTRIBUTOR



How YOU can give
the **GO** - signal

DETREX CORPORATION
BOX 501—DEPT. 600-D
DETROIT 32, MICHIGAN

Yes, we're interested in better cleaning quality and lower cleaning cost.
Have the local Detrex man arrange to come in and show proof of the results
Detrex can produce for us.

NAME _____

TITLE _____

COMPANY _____

CITY _____

ZONE _____

STATE _____

to

DETREX

for guaranteed
**METAL CLEANING
RESULTS**



If you're interested in better metal cleaning and surface preparation, if you're interested in important savings in cleaning chemicals, there's one sure and simple way to get both . . . put your pen to the coupon above!

Here's what happens when Detrex receives this go-signal from you. At your convenience, our local man will survey your present or proposed metal cleaning operations. It's done without fuss or fanfare . . . he knows his business and how to go about it without disrupting yours.

Shortly afterward, he'll be back with specific recommendations AND the benefits he guarantees if you follow them. Like thousands of other manufacturers, you'll find these recommendations make good sense in terms of cleaning quality. In most cases they'll result in substantial savings, too!

Why can Detrex guarantee these results? Because Detrex manufactures both the equipment and chemicals for every type of metal cleaning . . . alkaline and emulsion washing, solvent degreasing, even cleaning by sound waves*. It adds up to industry's most comprehensive metal cleaning service! It can't be matched anywhere.

*SONICLEAN PROCESS

Just send us the coupon above, or drop us a letter. We'll be glad to prove our point.
DETREX CORPORATION, Box 501,
Detroit 32, Michigan, Dept. 600-D.



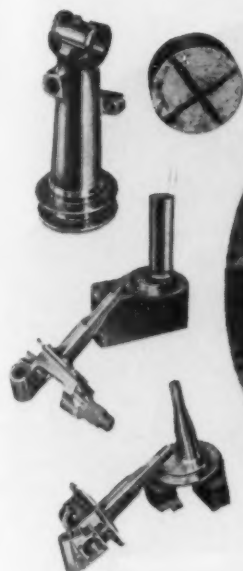
DETREX

CORPORATION

DEGREASERS • DEGREASING SOLVENTS • WASHERS
ALKALI & EMULSION CLEANERS • DRYCLEANING
EQUIPMENT • PHOSPHATE COATING PROCESSES

Safe Driving at 154 m.p.h...

thanks to **FRASSE** alloy steels



Courtesy: B. S. Cunningham Co.

Clocked at 154 mph, this American Cunningham won top honors in its class at Le Mans, France. Expert driving—plus expert design—brought home the bacon.

The near-endless abuse of a grueling 24 hour grind demanded foresight in materials selection. Parts failure could have been costly . . . perhaps fatal.

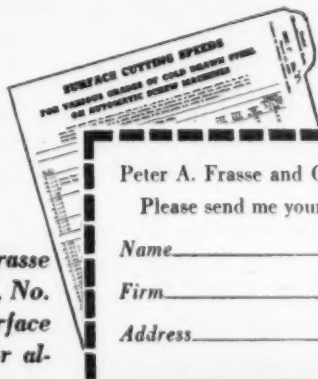
To meet rigid design specifications, the maker consulted Frasse Technical Service. Frasse engineers prescribed a heat treated, 40 carbon

alloy—shipped direct from warehouse stock. Axles, spindles, brake parts, steering arms—all vital parts—were machined from Frasse steels. The result attests to their perfect performance.

When you're faced with an alloy problem—let Frasse know-how prescribe for you. Frasse alloy steels include all the popular grades—in a wide range of sizes—and Frasse Technical Service stands ready to assist you in their application. Why not let this combination help make your product a winner?

MACHINING ALLOY AND CARBON STEELS?

Get this handy Frasse data chart Sec. F, No. 6. It includes surface cutting speeds for alloy and carbon steels. You'll find it ideal for shop or estimating use. Mail the coupon for your free copy—today.



Call **FRASSE 1st** for **ALLOY STEELS**

Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y.

54.111A

Please send me your free data chart Sec. F, No. 6.

Name _____ Title _____

Firm _____

Address _____

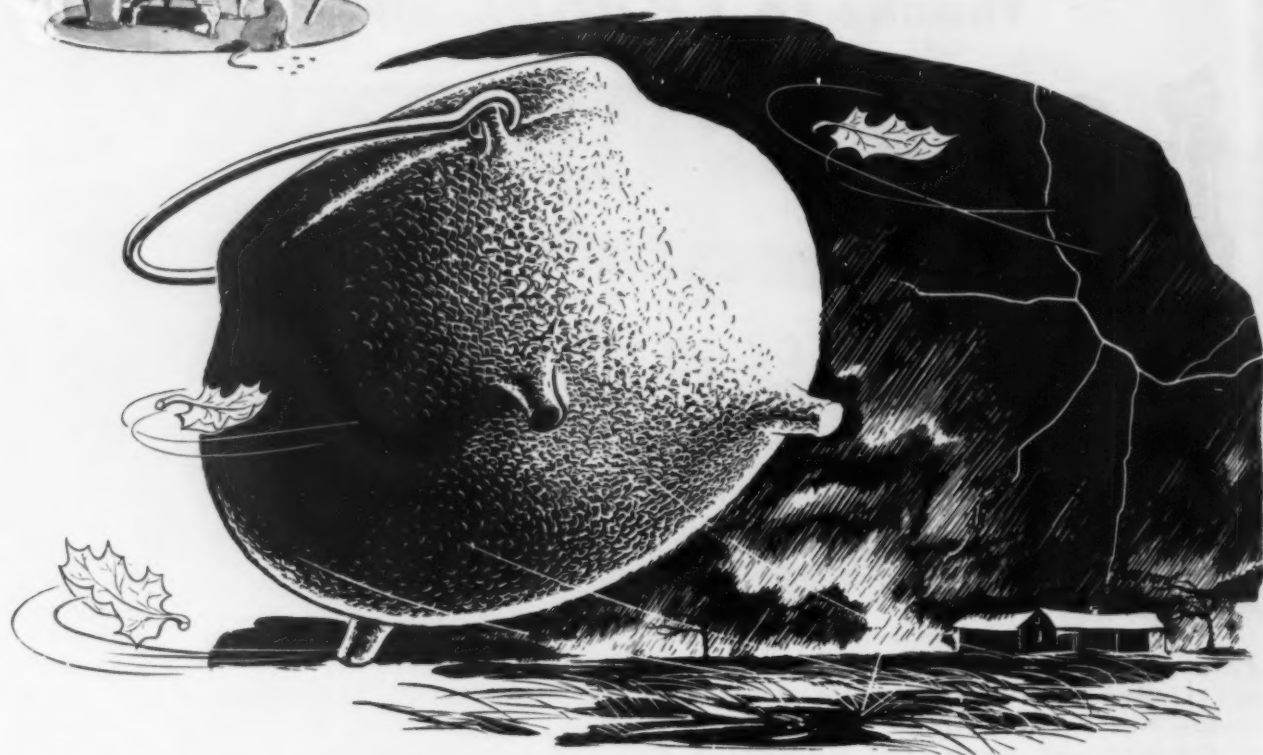
Peter A. FRASSE and Co., Inc.

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LYNDHURST • ROCHESTER • BALTIMORE

March 25, 1954



THE BURLINGTON LIARS' CLUB
SPINS A YARN FOR BAKER'S MAGDOLITE



Strike Three...You're Out

"They say they have big winds in Texas. Stuff! Compared to the windstorms we have in Virginia, they would be just a gentle breeze. Show you what I mean, here's an example. The other day we got us a windstorm, with plenty of thunder and lightning, the likes of which you've never seen. There was a big, old iron kettle, we used to scald hogs in, standing out in the yard. The wind picked up that kettle and blew it across the yard so fast that lightning struck at it three times and missed."

Guess Jupiter will have to send that lightning bolt back to the "bush leagues." It doesn't

quite make major league material. If you are looking for "major league" dolomite, try BAKER'S MAGDOLITE — the original dead-burned dolomite. You'll discover that BAKER'S MAGDOLITE has chemical, physical and mineralogical composition which assures you of higher ingot uniformity with reduced maintenance costs. BAKER'S MAGDOLITE is better five ways . . . Composition, Preparation, Economy, Strength, Quality.

This tale was the Champion "whopper" at the 24th Annual Convention of the Burlington Liars' Club.



8-54

© The J. E. Baker Company

PRODUCTS
SINCE 1889

MAKERS OF BAKER'S
MAGDOLITE

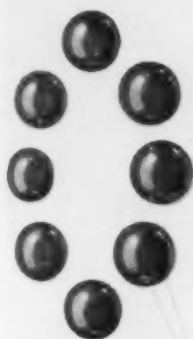
THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA

Plants: Billmeyer, York, Pennsylvania — Millersville, Ohio

Federalize!

AND
YOU'VE
MODERNIZED!



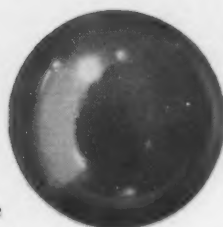
The age of the Big Change is here: the propeller is giving way to the jet...precision is giving way to super-precision...

the instrument quality controls of yesterday are industrial museum pieces today... motion itself has taken a new name: *speed*.

The America that rolled along on Federal decades ago is a new America, rolling on a new Federal today. The Federal bearing that once smoothed the way for one horsepower has been modernized to do the same job with a 1/10 horsepower.

And change is the order of the day with sources of supply. The purchasing powers across America are taking a new look at the old familiar faces... are re-examining, re-appraising...are learning that yesterday's No. 2 sources of supply are ready to become today's No. 1.

Changing with change...new with the new is Federal. Take a new look at this one of the world's largest ball bearing manufacturers...then specify Federal. *Federalize and—you've modernized.*



Federal Ball Bearings

One of the world's largest ball bearing manufacturers

THE FEDERAL BEARINGS CO., INC.
POUGHKEEPSIE, N. Y.

Producers of the *Modern* ball bearing

March 25, 1954

51

When the Going's *Rough!*

**Designed and Built
for Steel Industry
Application**

**ALLIS-CHALMERS
Type H Starters**

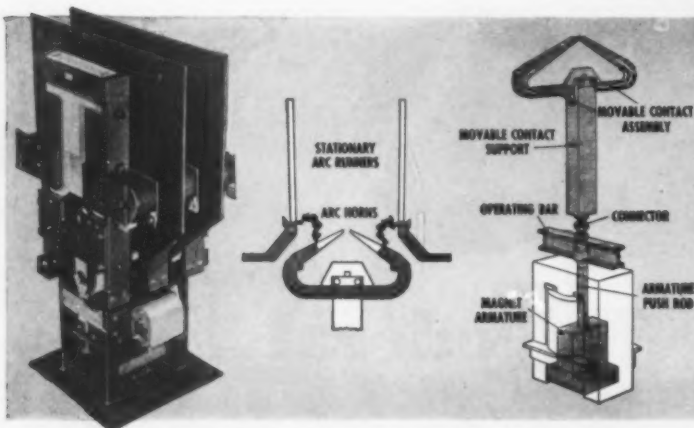
**FOR 2300 TO 3000
VOLT MOTORS**

HERE IS A STARTER that is as rugged as the steel industry itself. All the starter's components . . . contactors, meters, overload relays, current limiting fuses, auxiliary switches . . . are engineered and coordinated to meet heavy duty steel mill demands — to provide high capacity interruption and complete protection for man, motor and machine.

Exemplifying the ruggedness of the Type H starter is the 256 air-break contactor. Frequent starting, inching, reversing or dynamic braking are taken in stride by this dependable performer. Contactor operations can be numbered in the millions with only routine servicing.

In many steel mill applications demanding high repetitive duty, the Type H starter can be used in place of circuit breakers . . . affording substantial savings in initial cost *and* upkeep. Find out how the Type H starter fits into your control picture. Call your nearby A-C representative or write Allis-Chalmers, Milwaukee 1, Wis. Ask for bulletins 14B6410B and 14B7303.

A-4102

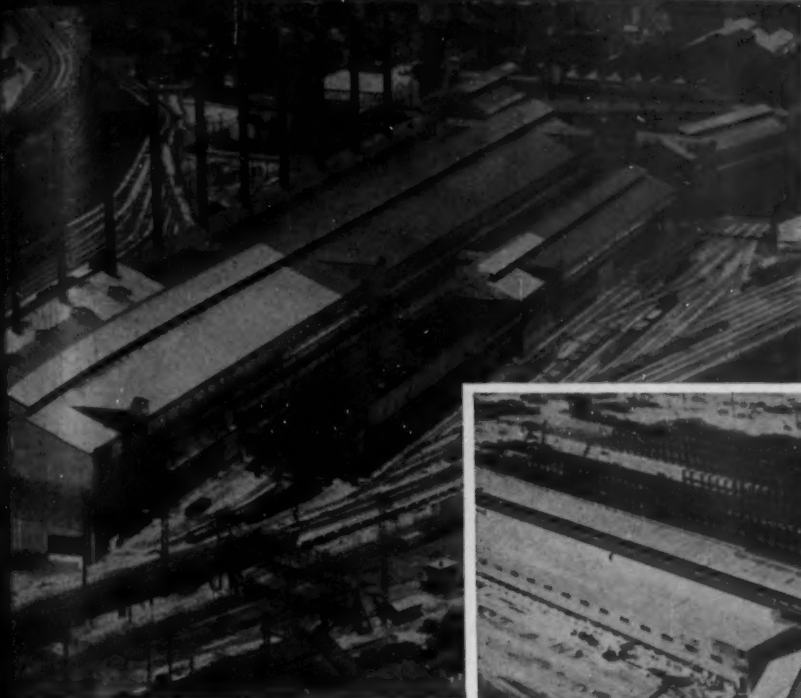


**Type 256
Air-Break Contactor**

Double-break contacts, vertical action and dual blowouts provide long, trouble-free life. No turning shafts, shaft bearings or flexible leads to cause maintenance headaches.

ALLIS-CHALMERS

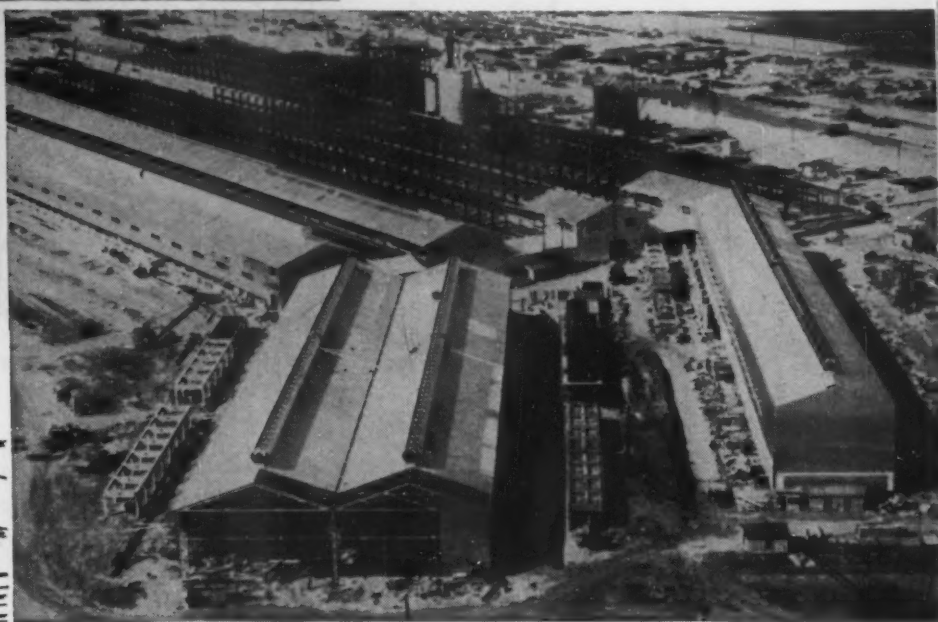




JONES & LAUGHLIN STEEL CORPORATION'S multi-million dollar expansion project on Pittsburgh's South Side.

• • •

REYNOLDS METALS COMPANY, San Patricio Plant, Corpus Christi, Texas, for increased production of aluminum.



Major Industrial Buildings
for Metals Production
Recently Fabricated and Erected
by

AMERICAN BRIDGE

- **ALUMINUM COMPANY OF AMERICA**
Point Comfort, Texas
- **JONES & LAUGHLIN STEEL CORPORATION**
Pittsburgh, Pa.
- **LONE STAR STEEL COMPANY**
Daingerfield, Texas
- **REPUBLIC STEEL CORPORATION**
Cleveland, Ohio
- **UNITED STATES STEEL CORPORATION**
Fairless Works
Morrisville, Pa.

AMERICAN BRIDGE

lends a helping hand

as nation's essential industries continue to expand!

LESS spectacular than city skyscrapers, but just as important to our nation's defense and economic growth, are the unheralded industrial buildings which have been built or are now under construction all over this great country of ours.

Of the thousands of such steel-frame structures built by American Bridge, we are perhaps proudest of those we have done, or are now working on, for vital industries. Included in this group are many important metal producers.

To be selected by these leading steel

and aluminum producers is a splendid tribute to the engineering, fabricating and erecting know-how of the American Bridge organization.

It is also your assurance that American Bridge has the fabricating facilities, erecting equipment and skilled personnel to handle any type of steel-frame construction with exacting precision, thoroughness and speed . . . any time, anywhere.

If you would like to know more about the advantages of American Bridge fabricated and erected steel construction, call our nearest office.

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE



UNITED STATES STEEL

How Do You Buy Socket Screws?

Many buyers continue to specify some one make by *habit*. They have no particular preference for it, but they think of *all* such fasteners simply as "screws with hex sockets" — *all* makes substantially *alike*.

If you buy that way, and have never tried P-K Socket Screws, just break the habit once, and give them an actual assembly test. You'll get a pleasant surprise.

You'll find that the hex shape of the socket is about the *only* way that other makes and P-K are "alike".

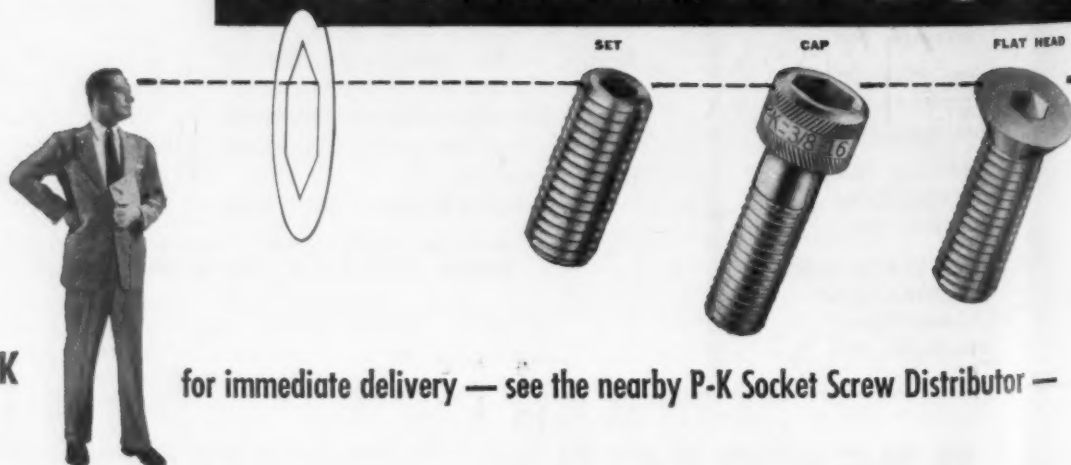
Look Beyond the Hex

It pays to *look beyond the socket* when you buy Socket Screws. Compare every detail of product and service. You'll find P-K Socket Screws take top rating in every test. You get exclusive features that simplify and speed up assembly. You get quality matched to a firm guarantee. You get planning and buying information exactly patterned to your needs.

You need *all* these essentials for cost-wise assembly. Why miss out on *any* of them? Just try P-K Socket Screws. Get samples from your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

for all the essentials of cost-wise assembly

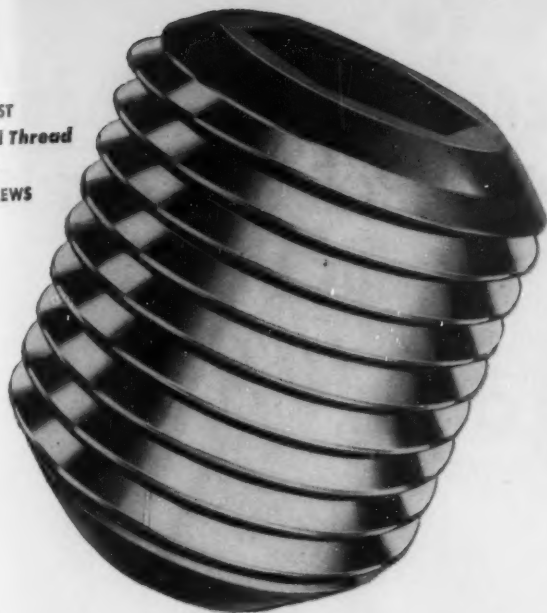
PARKER-KALON®



IN STOCK

for immediate delivery — see the nearby P-K Socket Screw Distributor —

THE FIRST
Ground Thread
SOCKET
SET SCREWS



In Socket Set Screws PARKER-KALON gives you

- **GROUND THREADS** — at no extra cost. Gage-like precision, mirror-smooth finish — uniform, dependable Class 3 tolerance. Mechanics like their easy starting, easy keying.
- **PROVED ASSEMBLY STRENGTH** The "proving ground" is the millions of assemblies made by thousands of satisfied users of P-K Socket Screws, whose products are used everywhere, many under the toughest conditions of vibration.

In Socket Cap Screws PARKER-KALON gives you

- **SIZE-MARK** — offered only by P-K. Incised on the head of each screw, it saves time and wasted screws when sizes get mixed up, prevents errors by green help. Maintenance and service men like Size-mark, it helps in reassembling.
- **GEAR GRIP** Meshing firmly with finger tips, it prevents slipping and fumbling when hands are oily, speeds starting.
- **MAXIMUM STRENGTH** Head, socket, and threads are accurately formed by Parker-Kalon's cold-pressure process. Steel structure "flows" to conform to all contours, assures maximum strength at points of greatest stress.

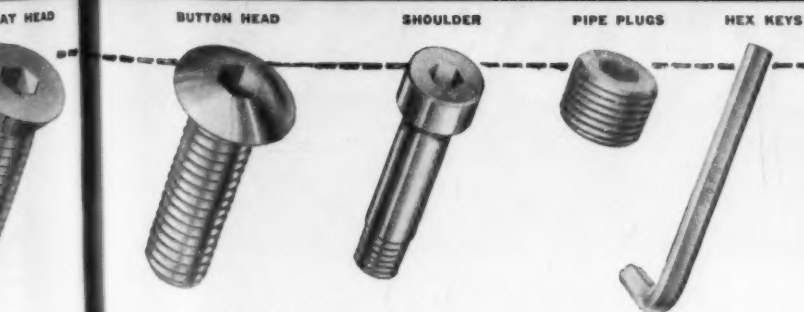
In all Socket Screws PARKER-KALON gives you

- **GUARANTEED FIRST QUALITY** Based on tests and inspections at every step in production — an exacting routine of quality control supervised by P-K Laboratory Technicians.
- **FULL RANGE OF STYLES AND SIZES** You'll find any Socket Screw you need, NC or NF, in P-K's complete line, and Hex Keys in all sizes, and in several handy sets. Ask your P-K Distributor for the P-K Price List, Catalog, — any information you need. Slide chart Socket Screw Dimension Finder Free.

THE ONLY
Size-Marked
SOCKET
CAP SCREWS

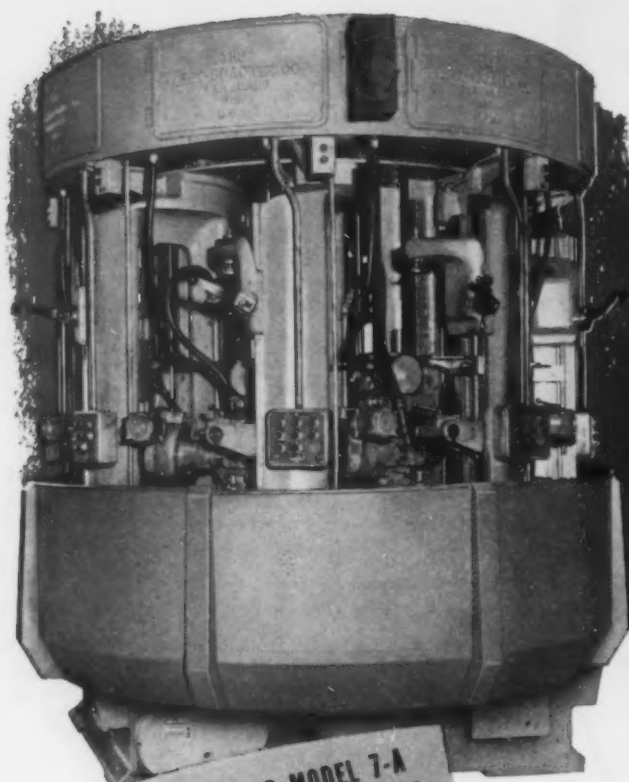


N SOCKET SCREWS



your local Supply and Service Specialist





**LEES-BRADNER MODEL 7-A
8-SPINDLE ROTARY HOBBERS**

- Push-button production controls
- Electric hob shifter
- Electronic counter for longer hob life
- Patented automatic hob in-out mechanism

**Engineered for Today
with Reserve Capacity
for the
*Future***



Things are moving fast these days. The car that was so spanking new and modern yesterday is "old hat" when the new models come out.

The same could be said for machine tools.

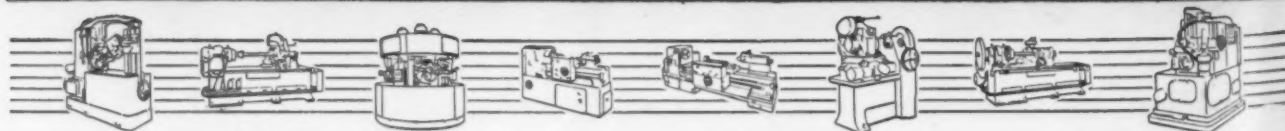
That's why it's important to *look ahead* when buying machines. To ask *more* than "What can it do today?" Tomorrow comes fast and it's important that the tools you buy now have the reserve capacity for your future needs.

Lees-Bradner hobbing machines are *engineered* for extra capacity. They're built to run longer and at greater speeds than other machines of their type. And because they are semi-automatic the labor savings are considerable.

That's why we can say that when you buy a Lees-Bradner hobber you're buying not only for today but for tomorrow, too.

Your Lees-Bradner representative will be glad to give you the facts. Or write us direct.

the **LEES-BRADNER** *Company*
CLEVELAND 11, OHIO, U.S.A.



MODEL R HOBBER HT THREAD MILLER 7-A ROTARY HOBBERS CRI-DAN THREADING MACHINES MODEL 40 THREAD MILLER 8H SPLINE HOBBER 12-B HOBBER

IF YOU THREAD OR HOB . . . GET A BETTER JOB WITH A LEES-BRADNER

y
ty

R

AGE

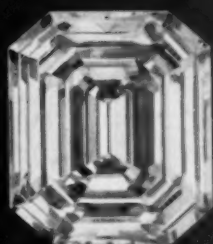
R

AGE

Here is perfection!

ROEBLING high carbon wire is unsurpassed for industry today. Roebling wire is absolutely true to specifications ...absolutely uniform in gauge and finish. Manufacturers who try Roebling wire once, become Roebling customers from then on.

You *pay* for the best when you buy high carbon wire. Make sure that you *get* it! Always specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.



The Janker, world's largest emerald-cut diamond.

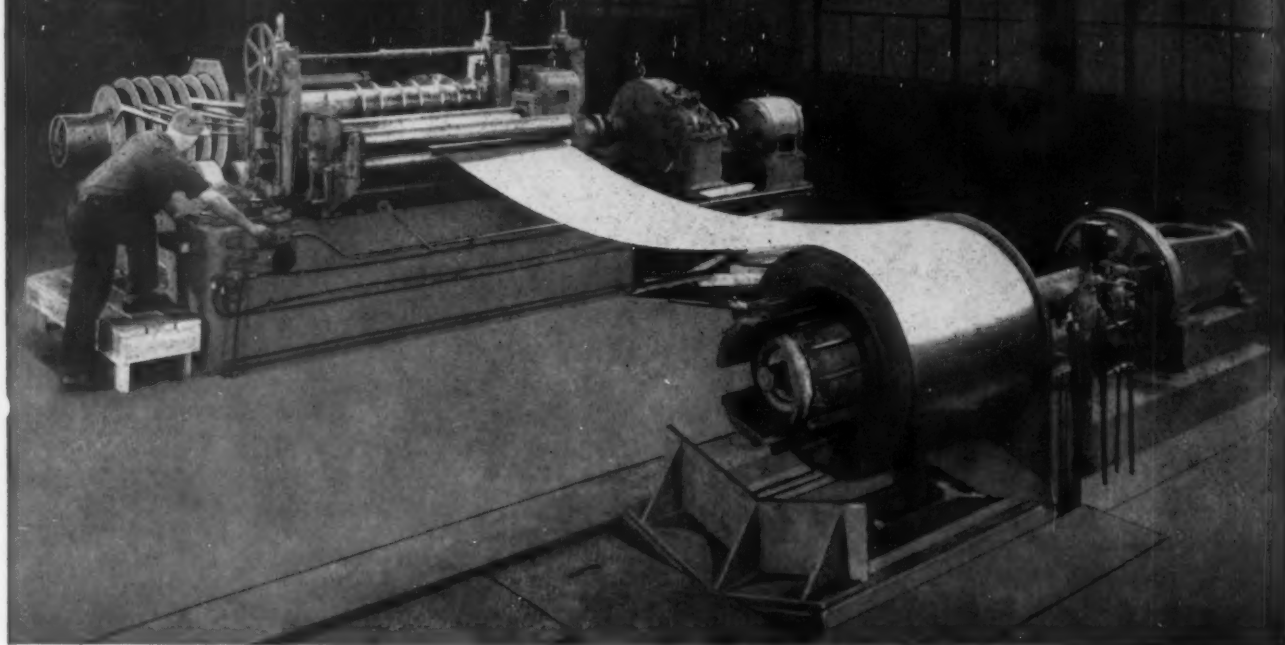


ROEBLING [CF]

A subsidiary of The Colorado Fuel and Iron Corporation

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YODER *Multiple Rotary* SLITTERS



pay Four Kinds of Dividends

If you use 100 tons or more of coiled strip or sheets per month, in special widths, the installation of a Yoder Slitter will pay four kinds of dividends:

1. Savings of \$10 to \$30 per ton by buying standard widths instead of slit strands. This saving alone often pays for the Slitter investment in a year or less.

2. You can buy standard widths competitively, wherever you can obtain the best quality, price and delivery.

3. Greatly reduced inventory requirements. From a relatively small stock of standard widths you can meet your own needs for special widths in a few hours.

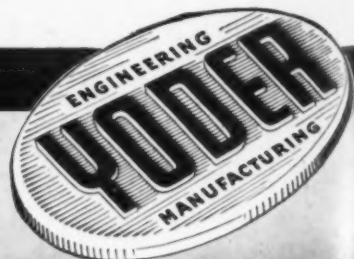
4. Better control of production schedules since slitting service no longer is a problem.

Yoder slitters, uncoilers, recoilers and other accessories are made in many sizes and capacities, from the smallest to the largest. The Yoder Slitter Book is a treatise on the economics as well as mechanics of slitter operation—send for it.

THE YODER COMPANY • 5510 Walworth Ave., Cleveland 2, Ohio

Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding



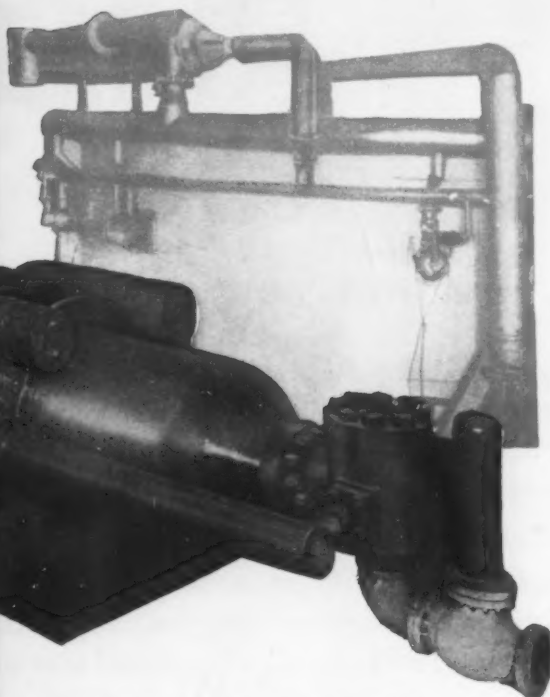
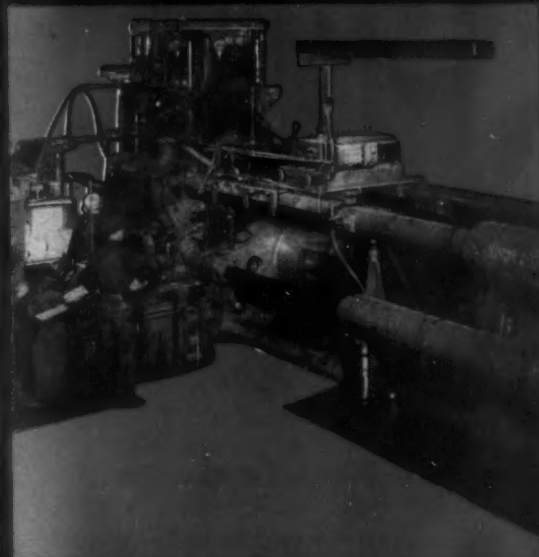
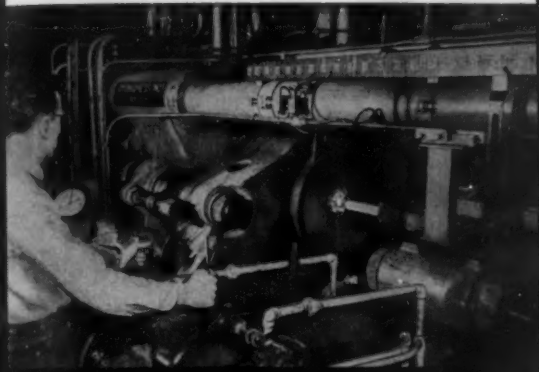
LOEWY-HYDROPRESS

FIRST

IN EXTRUSION OF STEEL

the first two steel extrusion presses ever to
go into commercial operation in United States
...in two leading steel companies

SPECIALLY DESIGNED FOR HOT EXTRUSION OF STEEL



WE BUILD:

Extrusion Plants for Steel and Non-Ferrous Metals • Open and Closed Die Forging Plants • Deep Drawing Single and Double Acting Presses • High-Pressure Pipe Testing and Expanding Machines • Hot and Cold Rolling Mills for Steel and Non-Ferrous Metals • Stretching and Detwisting Machines for Extruded Shapes and Sections • Sheet and Plate Stretching-Levelling Machines • Marform High Pressure Rubber-Forming Presses

Your Future Inquiries Are Invited

Loewy-Hydropress Extrusion Press for the production of seamless tubing and shapes from stainless steel and special alloys. Installed at the Beaver Falls, Pa. plant of the Tubular Products Division of The Babcock & Wilcox Co.



HYDROPRESS INC.
ENGINEERS • CONTRACTORS

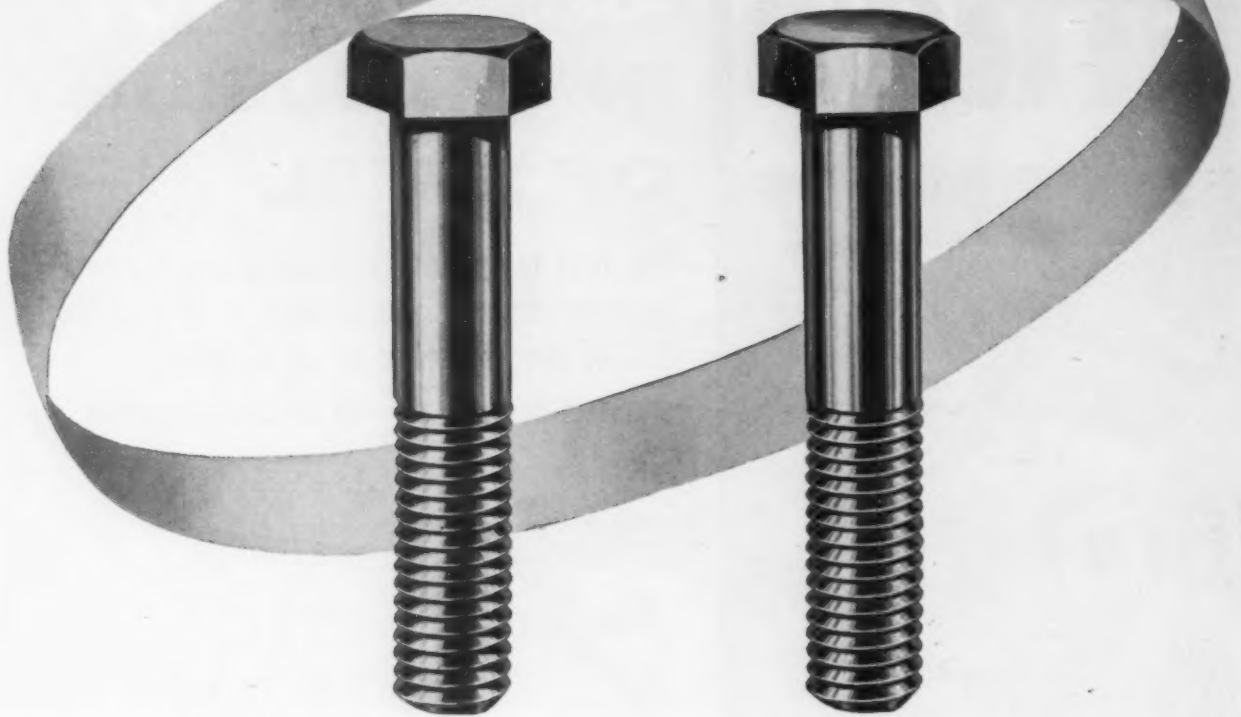
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March 25, 1954

Which is the *CleCap*?



...the one you got the day you wanted it!

All right, we'll skip the arguments about which of these two cap screws is the best . . . though we can prove that one is better because of the Kaufman *double-extrusion* Process and many other factors.

The BIG DIFFERENCE, if you ask long-time Clecap buyers, is the Clecap organization that cheerfully "breaks its neck" to get you what you want exactly when you want it. An astonishing record over the years!

Why not enjoy the comfortable worryless feeling a lot of buyers get by putting all their cap screw needs up to Clecap?

The Cleveland Cap Screw Co.

2929 EAST 79TH STREET • CLEVELAND 4, OHIO

VULcan 3-3700 TWX CV42

WAREHOUSES: CHICAGO • PHILADELPHIA • NEW YORK
PROVIDENCE • LOS ANGELES

Cleveland *Top Quality* Fasteners

Ferrous and Non-Ferrous

Hex Head Cap Screws—Bright and High Carbon Heat Treated Steel, Brass, Silicon Bronze, Stainless Steel; ¼" to 2 ½" dia.

Socket Head Cap and Set Screws—Plain and Knurled: ¼" to 1 ½" dia. Also Flat and Button Head Styles

Flat Head Cap Screws: ¼" to 1" dia.

Fillister Head: ¼" to 1 ¼" dia.

Set Screws—Square Head: ¼" to 1 ½" dia.

Milled Studs: ¼" to 1 ¼" dia.

Flange Bolts: ¼" to 1 ½"

Structural Bolts

Tractor Bolts

Facilities to make larger diameters than listed. Special Hot and Cold Headed Parts

Ask Your Jobber for *Clecap!*

Originators of the Kaufman **DOUBLE EXTRUSION** **Process**

NO HEAT NEEDED

when you use **NEW** **HOUGHTO-CLEAN** "cold" cleaners*

This substantial saving in heating costs alone, by changing to room-temperature Houghto-Clean, is enough to please any plant operator. But this manufacturer is now getting many other benefits besides:

- Easier to mix
- Temporary rust protection
- Parts cool enough to handle
- Longer solution life than hot cleaners
- Improves working conditions by eliminating hot, steamy installations

Write now for new Houghto-Clean bulletin, describing the unique room-temperature cleaning method for use in power washers on production lines. Address E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa. Or ask the Houghton Man for a copy.

HOUGHTO-CLEAN COLD CLEANER

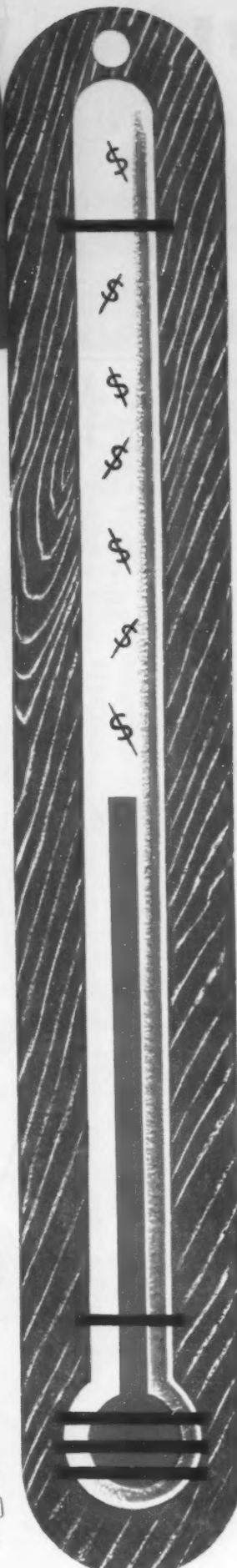
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E. F. HOUGHTON & CO.
PHILADELPHIA • CHICAGO • DETROIT • SAN FRANCISCO

Ready to give you
on-the-job service . . .



Room-Temperature
Metal Cleaning
Saves Screw
Manufacturer
\$2200 a year!



DOUBLE WELDED

for GREATER SAFETY

Shatterproof, Extra
Strong Body Makes
It Practically
Unbreakable

for GREATER PRODUCTIVITY

High Speed Steel
Welded Edge Gives
More, Straighter
Cuts Per Blade

Starrett® SAFE-FLEX®

HIGH SPEED WELDED EDGE

POWER

HACKSAW BLADES



RE-ORDER
Starrett
SF-1804-76
1 1/2" x .072-4T



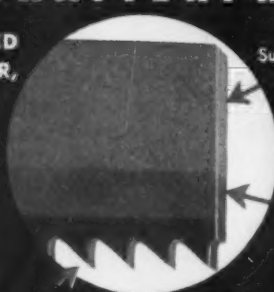
Double welding makes this great new power blade the safest, straightest-cutting, longest-lasting hacksaw you can buy. Use it with complete safety for your toughest cutting jobs — for multiple sawing or interrupted cuts. Step up the feed and speed and watch it breeze through work that shatters ordinary blades.

Double welded construction as featured in these new Starrett SAFE-FLEX Power Blades gives you a cutting edge of hard high speed steel, reinforced with a medium-hard, extra strong center and backed up by a super-tough steel back. This ideal combination is integrally welded by modern methods to make a far stronger blade with a perfect balance of hardness and toughness.

Ask your safety engineer and production supervisors to look into this great new blade. Order some today through your Industrial Distributor.

IT'S SHATTERPROOF!

DOUBLE-WELDED
FOR SAFER, STRAIGHTER,
FASTER CUTTING



Super-Tough Steel Back
For Extra Toughness
and Straight Cutting

Medium-Hard
Steel Center For
Extra Strength

Hard "High Speed" Edge
For High Production Cut-
ting. Heavy High Speed
Edge For No Tooth
Stripping.

Visit The STARRETT Exhibit
BOOTH 211, ASTE SHOW

THERE IS A STARRETT HACKSAW BLADE FOR EVERY JOB
— HAND AND POWER SIZES. FOR COMPLETE INFORMATION,
WRITE FOR STARRETT HACKSAW CATALOG 1A

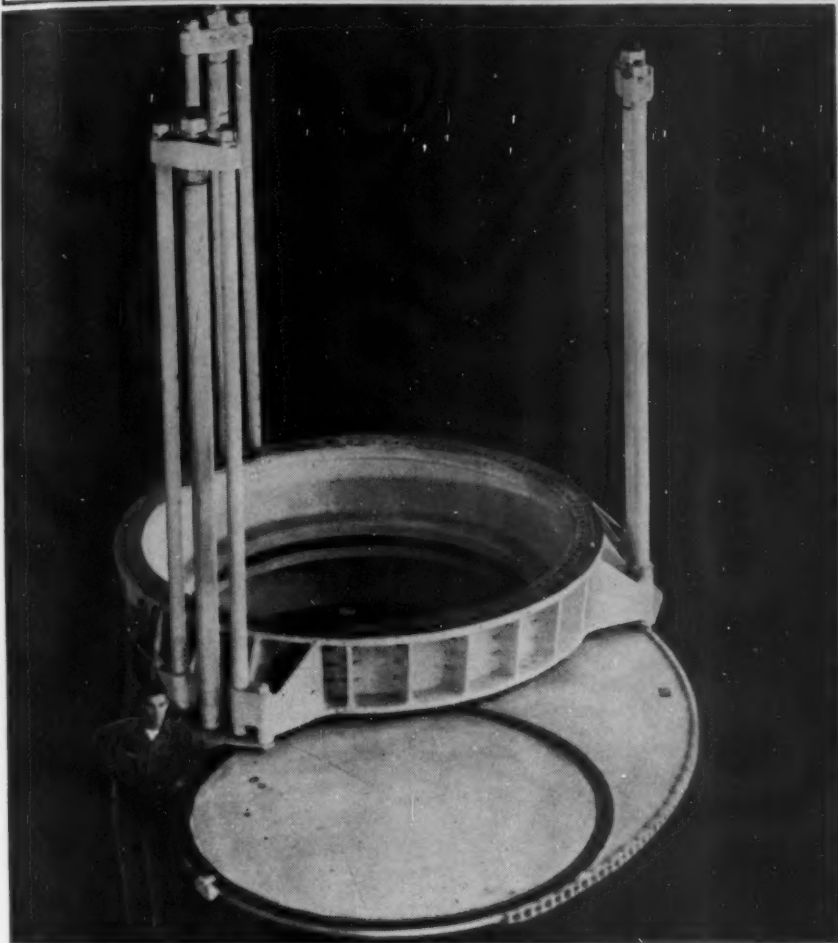
Starrett®

"WORLD'S GREATEST TOOLMAKERS"



MECHANICS' HAND MEASURING
TOOLS AND PRECISION INSTRUMENTS • DIAL INDICATORS • STEEL TAPES
PRECISION GROUND FLAT STOCK • HACKSAWS, BAND SAWS and BAND KNIVES
THE L. S. STARRETT COMPANY, ATHOL, MASSACHUSETTS, U. S. A.

HOW A FORCE OF NATURE IMPROVES STEEL MILL SAFETY



Designed to protect men and equipment, this heavy duty Bailey Valve was produced for one of the nation's major steel makers. Although its diameter is 120" and its weight is close to 42,000 lbs., it is precisely machined to assure a tight, positive gas seal.

AN UNFAILING force of nature—the linear expansion and contraction of steel—is being used to increase steel mill safety. This powerful force, applied to Bailey Thermal Expansion Goggle Valves, provides a safe, dependable means of positive shutting off large gas mains in emergencies or for repairs.

The Function of Goggle Valves

Ranging in diameter from 36" to 120", this type of valve long has been indus-

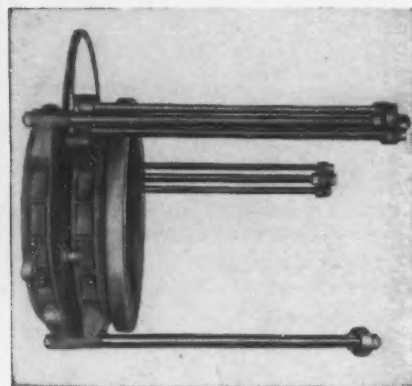
try's standard method for controlling gas in the large mains for blast furnaces, gas washers and boilers. They take their name from one of their component parts—a large, moveable plate shaped like a pair of aviation goggles. This plate has one "goggle" open, the other of solid steel. When a gas main is in operation, the open goggle allows gas to flow through it freely; when the gas is to be shut off, the plate is moved until the closed

goggle blocks the main, forming a tight, leak-proof seal.

BAILEY THERMAL EXPANSION GOGGLE VALVES

Safety and efficiency in closing the larger sized gas mains are provided by Bailey Thermal Expansion Goggle Valves. In them, the powerful force of linear expansion and contraction of three steel tubes is used to free or clamp the goggle plate—providing an absolutely gas-tight seal.

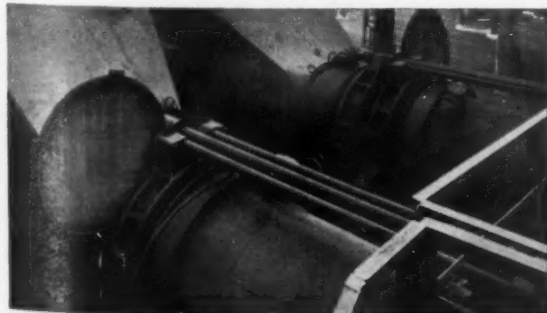
In operation, steam is passed into the tubes, which are spaced evenly around and perpendicular to the rigid steel flanges of the valve. The resulting expansion frees the heavy goggle plate so it may be swung to the open or closed position. When the steam is shut off, contraction of the tubes takes place, closing the flanges tightly against the goggle plate. Since both sides of the plate are machined to conform to the machined edges of the valve flange, Bailey Valves are leak-proof in both



Bailey Thermal Expansion Goggle Valves are produced in diameters from 36" to 120".

open and closed positions.

Sound design and precision manufacture are combined in these valves to assure the ultimate in safety and reliability. They have been thoroughly proved on the gas mains of blast furnaces, gas washers and boiler plants. Bailey Thermal Expansion Goggle Valves are completely dependable in hot or cold, dirty or clean gas mains.



These valves are in service on an Elex Precipitator. In this view the goggle plates are in the open position.

WILLIAM M. *Bailey* COMPANY
ENGINEERS

1221 Banksville Road
Pittsburgh 16, Pa.

**J&L
STEEL**

JAL-TREAD

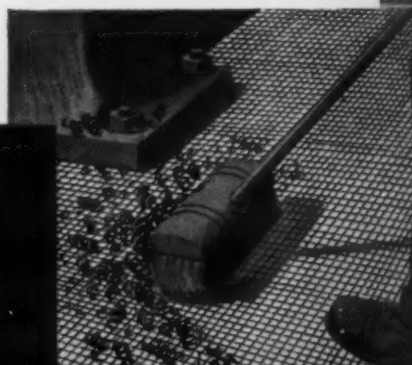
*for **safe**
permanent flooring*

Jal-Tread floor plate combines the strength and durability of high quality steel in an exclusive checkerboard pattern scientifically designed for *safety*.

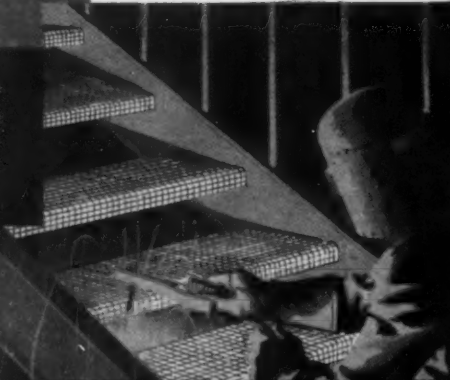
Whatever your application . . . in new construction . . . new equipment . . . or replacement jobs, Jal-Tread will assure you of these advantages:



SAFE FOOTING—300 miniature squares per square foot—all of uniform height—provide maximum linear friction surface that protects you against lost time accidents.



EASY CLEANING—Jal-Tread's straight line gutter pattern permits quick, thorough sweeping and draining in any direction.



EASY FABRICATION—Jal-Tread's straight line pattern simplifies welding, flanging, shearing, bending, punching, and drilling operations. Experience shows that Jal-Tread can be cold-formed on standard plate bending machines.

ATTRACTIVE APPEARANCE—

Jal-Tread's exclusive checkerboard pattern gives a distinctive, neat appearance in all its applications.

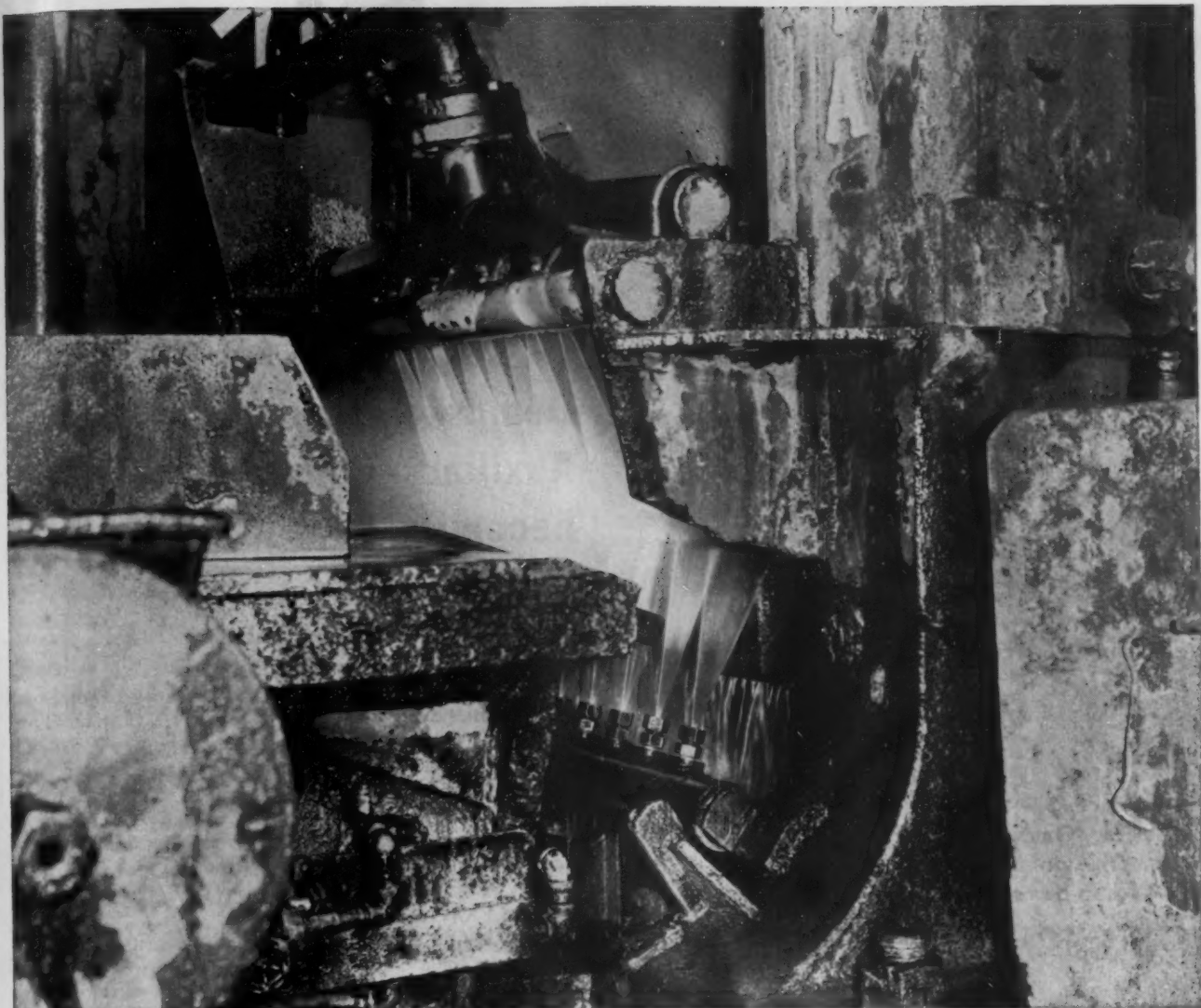
For safe, long-lasting flooring, specify J&L Jal-Tread . . . the only true checkerboard floor plate.

Available at leading distributors everywhere

Jones & Laughlin

STEEL CORPORATION — Pittsburgh

**J&L
STEEL**



HOT STRIP DESCALING

Thin jets of water strike with tremendous force against sheets of steel. Harmful scale is dislodged, broken up, carried away. The steel passes on—and its producer is assured of higher quality, more accurate gauge and better surface finish.

Such is the story every day, in one steel plant after another, wherever an *Aldrich Descaling System* is on the job.

In these plants Aldrich Direct Flow Pumps and Spray Nozzles, tied together in hard-hitting teams, do their

jobs quickly and efficiently. The pumps build up high water pressures to nozzles, which, in turn, are designed to produce knife-edged lines of water with an impinging force equal to 95% of the potential energy supplied to the nozzle orifices. This powerful action breaks the scale in a fraction of a second; the deflected stream of water washes away the loose scale.

The jet action and striking force developed by Aldrich Patented Spray

Nozzles give far more effective descaling than nozzles which produce jets of equal force but with larger impinging area . . . a claim proven in hot strip as well as billet descaling! High efficiency of cutting spray force results in thorough descaling *without* excessive cooling due to overabundant use of water.

There's an Aldrich Descaling System—or Pumps or Spray Nozzles—to meet *your* particular needs. Write us today for complete information.

The Aldrich Pump Company

8 PINE STREET • ALLENTOWN, PENNSYLVANIA

Representatives in Principal Cities

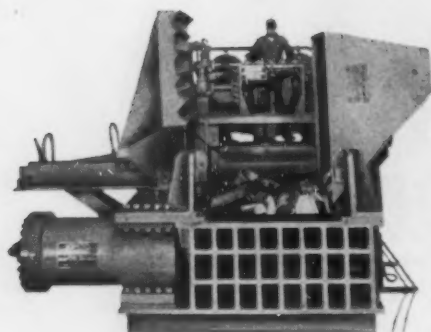


March 25, 1954

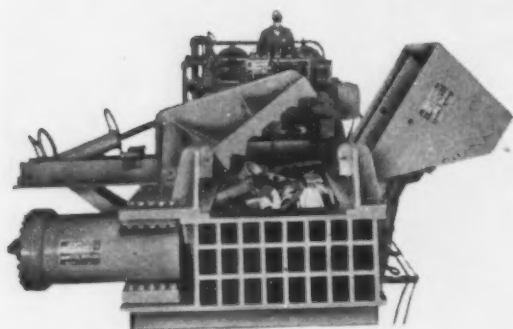
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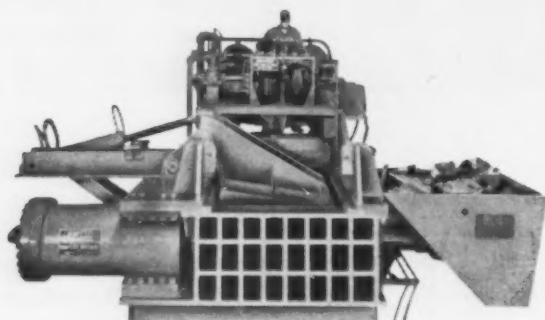
1. Here Skip Pan has been loaded.



2. Skip Pan dumps load into charging box.



3. Auxiliary-Compression Door starts its compression stroke as Skip Pan returns to be re-loaded.



4. Auxiliary-Compression Door crushes scrap into charging box.

5. At right the Auxiliary-Compression returns to up-right position and charging box door closes. Scrap is baled and then ejected. Skip Pan has been re-loaded and is ready to re-fill the charging box.



Dempster-Balester Auxiliary-Compression Door becoming a MUST for scrap metal baling

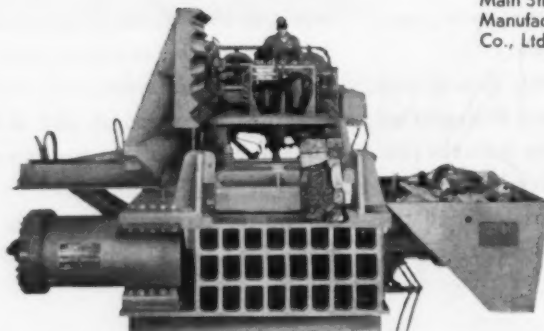
Before buying a scrap metal baling press, it is important to know that the Auxiliary-Compression Door is available exclusively for Dempster-Balesters. This door completely eliminates in some operations and materially reduces in others the costly process of tying up two or three extra men as arrangers. In addition, the hydraulically operated Auxiliary-Compression Door normally crushes scrap with one stroke . . . permitting charging box cover door to close immediately. This means a tremendous increase in production.

This increase in production and savings in man-hour costs have made the Auxiliary-Compression Door virtually indispensable for the greatest economy in scrap metal baling.

A Dempster-Balester Model 600 is shown in operation with Skip Pan Loader and Auxiliary-Compression Door. Note that every operation in the baling cycle is hydraulically controlled from the moment scrap is dumped into Skip Pan Loader until finished bale is ejected.

Write us for complete information. Dempster-Balesters are manufactured exclusively by Dempster Brothers, Inc.

IN CANADA: Sold by W. P. Favorite Co. of Canada, Ltd., 418 Main Street East, Hamilton, Ontario. Manufactured by Hamilton Bridge Co., Ltd.



DEMPSTER BROTHERS, 334 Dempster Bldg., Knoxville 17, Tenn.

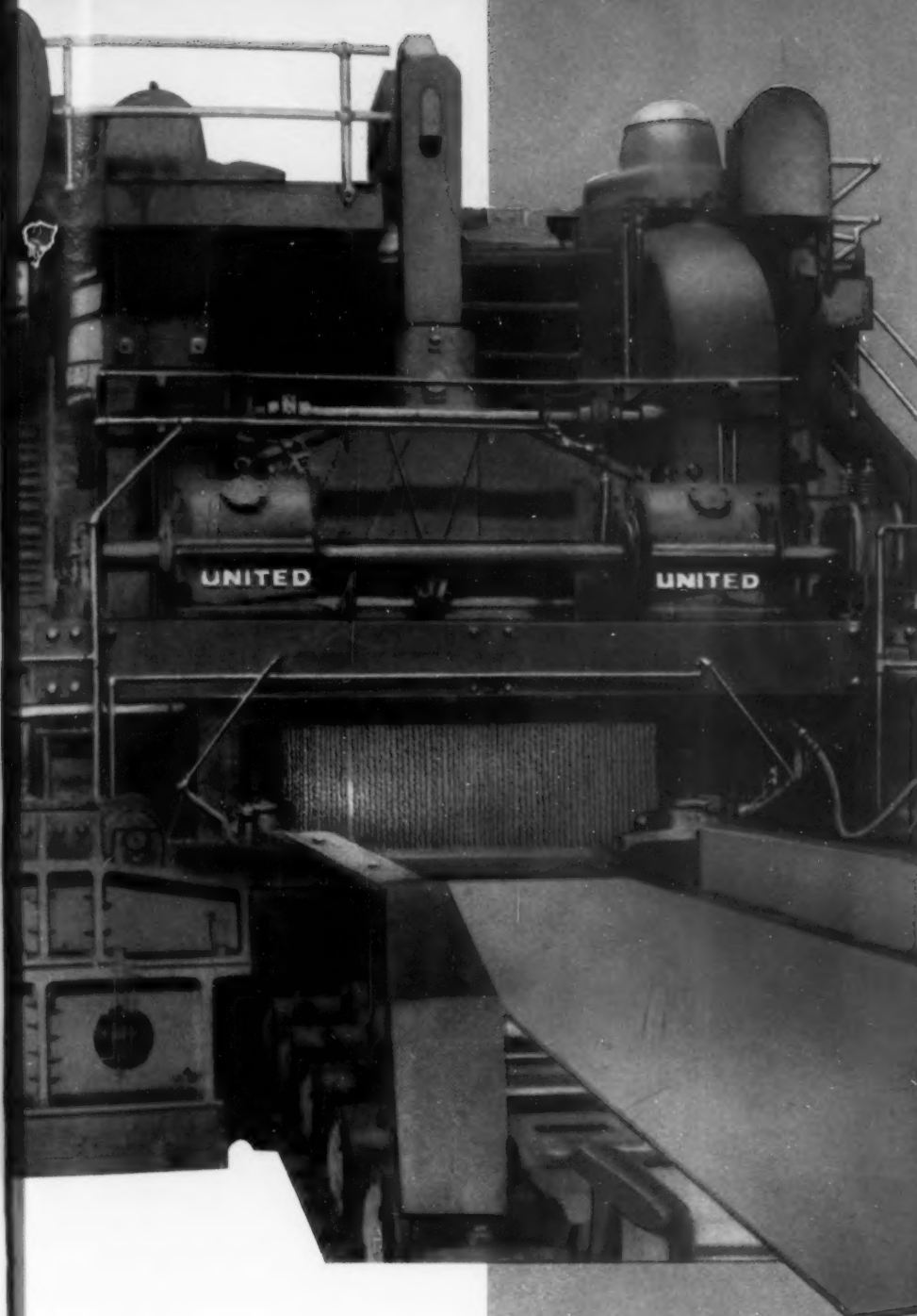
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AGE



UNITED

120 inch Plate Mill



UNITED

ENGINEERING AND FOUNDRY COMPANY
PITTSBURGH, PENNSYLVANIA

Plants at PITTSBURGH, VANDERGRIFT, NEW CASTLE, YOUNGSTOWN, CANTON

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Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment,
Presses; and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

UNITED can serve you no matter where in the world you are.



*now
even better*

SKF Triple-Seal "SAF" PILLOW BLOCKS

BETTER Because **SKF's** Type "C"
Spherical Roller Bearings . . .

*increase capacity
25% to 50%*

*increase service life
2 to 3½ times*

Designers throughout industry have heard the news from **SKF** — news about the **SKF** Type "C" Spherical Roller Bearing which, size for size, gives up to 50% increased capacity, 2 to 3½ times longer life!

Now there's more **SKF** news:

You can now get the famous **SKF** Triple-Seal "SAF" Pillow Block equipped with the Type "C" Spherical Roller Bearing!

This in addition to effective sealing from dirt.

This in addition to lubricant retention.

This in addition to adapter mounting for tight fits on standard shafting; "Free" or "Held" design.

This in addition to easy installation and inspection.

This in addition to bearings that self-align.

This in addition to greatly increased bearing capacity and life.

No other available bearing design gives you the capacity and life of the **SKF** Type "C" Spherical. Plan on it as part of your design, wherever you need a heavy-duty Pillow Block.

Any **SKF** District Office will help you. **SKF INDUSTRIES, INC.**, PHILADELPHIA 32, PA. — manufacturers of **SKF** and HESS-BRIGHT bearings. 7022



Send for **SKF** Bulletin No. 365-A — which gives complete facts — sizes available — increased life you can expect for each size.



THE CLEARING HOUSE

CONSIDER GOOD USED EQUIPMENT FIRST

BALER—SCRAP METAL

Legemann 7-PH Baler, Chamber 60" long by 18" deep x 16 1/2" wide, Finished Bundle 60-90 lb.

BAR TURNING MACHINE

26 Size RGF Medart Centerless Automatic Bar Turning Machine, Capacity 1" to 6" incl.

BENDING ROLLS

6" x 3/4" Duty Initial Type Bending Roll
12" x 3/4" Hillis & Jones Pyramid Type Bending Roll
12" x 3/4" United Pyramid Bending Roll
20" x 1" Southwark Pyramid Type Bending Roll

BRACKS—LEAF TYPE

8" x 1/2" Dreis & Krump Size 186
12" x 1/2" Dreis & Krump, Motor Driven
18" x 1/2" R.C. Leaf Type Brake, Hydraulic

BRACKS—PRESS TYPE

10" x 3/4" Dreis & Krump Size 209
10" x 3/4" Dual Model 60-12 All Steel Press Brake
10" x 3/4" Dreis & Krump Model 4510D Press Brake
12" x 3/4" Loy & Nawrath Press Brake
12" x 3/4" Cleveland Steelweld Press Brake L-5 1/2-10

CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton Northern 30' Span 230 Volt D.C.
7 1/2 ton Floor Operated 22' Span 220/3/60 A.C.
10 ton Northern 30' Span 230 Volt D.C.
15 ton P & H 97' Span 115 Volt D.C.
With 220/440/3/60 Motor Generator
15 ton Shaw 60' Span 230 Volt D.C.
20 ton Toledo 75' Span 550/3/60 A.C.
25 ton P & H 26' Span 440/3/60 A.C.
25 ton P & H 37' Span 440/3/60 A.C.
30 ton Cage 48' Span 230 Volt D.C.
With 5 ton Auxiliary 60' Span 220/3/60
125 ton Cleveland 64' Span 220 Volt D.C.
With 2 Trolleys 6 1/2 Ton & 10 Ton Aux.

DRAW BENCH

100,000# Poole Draw Bench, Max. length bar 39' With draw up to 4 1/2" max. round

FORGING MACHINES

1 1/2" 2", 3", 4", 5", 7", Ajax
1" 2", 3", 5", Acme
4" National

FURNACE—ANNEALING

Surface Combustion Corp. Annealing Furnace Continuous Five Chain Conveyor Type, Gas Fired

FURNACES—MELTING

6 ton Pittsburgh Melt. Furnace—Top Charge
6 ton Swindell Arc Melting Furnace

HAMMERS—BOARD DROP—STEAM DROP—

STEAM FORGING—800 lb. to 8,000 lb.

LEVELERS—ROLLER

54" Aetna Standard Leveler, 17 Rolls 4 1/4" Dia.
72" Sutton Roller Leveler 17 Rolls 2 1/2" Backed-up

No. 0 MEDART Continuous Automatic Bar Straightening Machine, M.D. Capacity 1/4" to 1 1/2" diameter incl. or 2" Tubing, Any Length

PRESSES—HYDRAULIC

75 ton Beatty Gap Type, 20" Stroke, Table 40" x 40"
300 ton Farrel Birmingham, 18" Stroke Platen 38" x 35", Pump & Motor Incl.
500 ton Southwark Hydraulic 24" Stroke, 78" Daylight Platen 64" R to L x 32" F to B
1200 ton Baldwin Southwark 4-Column Hydr. Press, 38" Stroke, 37" x 51" Between Columns
1500 ton Southwark, 4-Column Press, 36" Stroke Distance Between Columns 30 1/2" x 44 1/4"

PRESS—INCLINABLE

Niagara B1-6 1/2 Double Crank OBI Press, 4" Stroke Area of Bed 35" x 46"

PRESSES—STRAIGHT SIDE

No. B6 1/2 x 72 Niagara Gap Type Press, 6" Stroke Bed Area 72" R to L x 32 1/2" F to B
No. 164 Bliss, 65 Ton SS Press, 3 1/4" Stroke, Area of Bed 34" x 38"
No. 304 Bliss, 56 Ton SS Press, 8" Stroke, Area of Bed 18" x 24"

PRESS—TOGGLE DRAWING

No. 58 Bliss Stroke 21", Blankholder Stroke 13" 34" Between Uprights

PRESSES—TRIMMING

No. 74 1/2 Bliss, With Side Shear, 6" Stroke, Bed Area 21" x 21" 87 Ton
No. 76 1/2 Bliss, With Side Shear, 6" Stroke, Bed Area 38" x 26 1/2" 175 Ton

ROLL—PLATE STRAIGHTENING

8 1/2" x 1 1/4" Bersch Heavy Duty, 7 Rolls 13" Dia.

ROLLING—MILLS

7 1/2" Steelco Four High Rolling Mill
12" x 16" Waterbury Farrel Temper Mill
12" x 16" Waterbury Farrel 2-High Cold Mill
16" x 20" Lewis 2-Stand 2-High Cold Rolling Mill
18" x 24" Waterbury Farrel Two Stand Two High

30" x 30" Poole Two Stand Two High

22" x 40" Single Two High
18" x 60" Three High Roughing Mill

ROLL—FORMING

10 Stand Maplewood Mach. Co. Tube Forming Machine, Capacity 1/4" to 2" O.D.

SHEARS—GATE

6" x 1 1/2" Pexto, Motor Driven
8" x 3/4" Cincinnati Gate Shear
12" x 1" Pacific Hydraulic Gate Shear

SHEARS—ANGLE

6" 6" x 3/4" Hillis & Jones No. 2 Double Angle Shear
8" x 8" x 1 1/4" Kling Double Angle Shear

SHEARS—ROTARY

No. 30A Quickwork Rotary Shear, Capacity 5/16" Quickwork Rotary Shear, With Circle Cutting Attachment, Capacity 3/8"

SHEARS—SQUARING

12" x 1 1/2" Niagara, 18 Gap, Motor Driven
10" x 3/16" Dreis & Krump Motor Driven
12" x 3/16" Cincinnati, Motor Driven
12" x 3/4" Niagara Motor Driven LATE

SLITTERS

12" Yoder Slitting Line
20" IM&M Co. Slitting Line, Complete with Collars & Pay-off Reels, Max. Capacity 15 cuts .075"

24" Torrington Heavy Duty Slitter
120" Stameco Sheet Slitter

SWAGING MACHINES

No. 7 Langeller Swager, Capacity Tubing 3 1/4", Solid Cold 2 1/4", Solid Hot 3"
No. 8A Penn Rotary Swager, Capacity 2 1/4" Solid 6" Steel Tubing, Motor Driven

STRAIGHTENERS

No. 3 Medart 3-Roll Rotary Straightener, Capacity 1" to 3 1/4" Bars or 4 1/2" Pipe or Tube
No. 4 Abramson Flat & Shape Straightener, Capacity 3 1/2" x 3/4" Flats, 2" Square & Hex, etc.

TESTING MACHINES

60,000 lb. S.T.E. Universal, Motor Driven, Late 100,000 lb. Reichle Universal, Motor Driven
200,000 lb. Tinius Olsen Universal
Pratt & Whitney Co. Electrolimit Strain Gauges

TUBE MILL

1" Tube Mill, Complete with Accessories including Amer Fusion Corp. Welding Unit, etc.

WELDING POSITIONER

40,000 lb. Worthington-Ransome Model 400 Welding Positioner, Table Top 84" Square, NEW 1930

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THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

PUNCHES & SHEARS

No. 2 Hillis & Jones Horizontal Punch, m.d.
No. 6 Long & Allstatter Single End, m.d.
No. 7 Thomas Vertical, latest
No. 4 1/2 Hillis & Jones Punch & Shear, single end, type G
Cleveland Shear, 72" gap, 18" blade, will shear 1910-1" plate 72" gap Cleveland Plate Punch

PLANERS

P10 Coulter Crank Type Shaper-Planer, 1 head, m.d.
20" x 20" x 5' Whitcomb-Blaisdell Planer, 1 head, m.d.
24" x 24" x 5' G. A. Gray Planer, belted, m.d., 1 head on cross rail
24" x 24" x 6' G. A. Gray Planer, belted, m.d., 1 head on cross rail
30" x 30" x 8' Cincinnati Double Housing, 2 rail heads
30" x 30" x 10' Cincinnati, belted, m.d., 2 heads
36" x 36" x 8' Cincinnati, 2 heads, m.d.
36" x 36" x 10' Betts, belted, m.d., 2 heads on rail, 2 side heads
36" x 36" x 10' Gray, Extra Heavy Pattern, m.d., 2 heads on rail
36" x 36" x 10' Niles-Bement-Pond, belted, m.d., 1 head on cross rail
36" x 36" x 12' Betts, m.d., 2 heads
36" x 36" x 18' Niles-Bement-Pond, 2 heads, variable speed, m.d.
36" x 36" x 20' Cincinnati, 2 heads, belt
36" x 36" x 20' Gray, 2-heads, belt
42" x 42" x 14' Niles-Bement-Pond, reversing, m.d., 2 rail heads

42" x 42" x 26' G. A. Gray, 2 heads, belted, m.d.
48" x 48" x 18' Niles-Bement-Pond, 2 heads, belt
48" x 48" x 18' Detrick & Harvey, 4 heads, reversing, m.d.
48" x 48" x 28' Cincinnati, reversing, m.d., 4 heads
56" x 42" x 14' Cincinnati, belted, m.d., 2 heads
72" x 72" x 36' Niles, 4 heads, reversing, m.d.

SAWS

No. 4XB Robertson Economy Saw, m.d., new
No. 48 Robertson Economy Saw, m.d., new
Gustav Wagner Cold Saw, m.d.
7 1/2 H.P. Cintil. Elec. Tool Co. Abrasive Cut-off Machine, type JCOW
Kolle Heavy Duty Steel & Metal Bandsaw, Model BSM-40, new
6 x 6" Racine Power Hack Saw, model 2C
6 x 6" Peerless Hack Saw

RAILROAD MACHINERY

No. 2 Niles-Bement-Pond Double Head Axle Lathe, m.d.
No. 3 Niles Axle Lathe
48" Niles-Bement-Pond Car Wheel Borer, m.d.
90" Niles Balanced Quartering & Crank Pin Turning Machine, latest
90" Putnam Driving Wheel Lathe, m.d.
90" Niles Journal Lathe, including 2 inside journal turrets and 3 1/2" spindle double quartering attachment, m.d.
90" Niles Driving Wheel Lathe, m.d., latest
Niles-Bement-Pond Quartering Machine, m.d., new

SHAPERS

No. 7A Douglas Vertical Shaper, m.d.
16" Hercules Shaper, m.d., new
24" Potter & Johnston, cone

24" Gould & Eberhardt Back Geared Crank Shaper, m.d.
32" Cincinnati H.D. Back Geared, cone, motorized
32" Morton Draw-Cut, m.d., late
32" Ohio Dreadnaught Extra Heavy, m.d.
36" Morton Draw-Cut, m.d., late
36" Ohio Dreadnaught Heavy, m.d.

SLOTTERS

10" Newton, m.d.
10" Newton, cone
12" Bement-Miles, m.d.
15" Canada, m.d.
18" Dill, m.d.
18" Betts Crank Slotter, m.d.
18" Niles-Bement, s.p.d.
20-24" Dill, m.d.
22" Betts, m.d.
48" Niles, m.d.

TAPPERS

No. 1 Haskins, pneumatic control, type 1 CAP
No. 2 Haskins, pneumatic control, type 2 CAP
No. 3 Haskins, pneumatic control, type 3 CAP
Acme Semi-Automatic, 6 spindle, 1 1/2", arranged for m.d.
No. 3C Haskins, pneumatic control, type 3 CAM, m.d.
2 spindle Haskins, pneumatic control
No. 22 Murchey, 6 to 28 pitch



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THE EASTERN MACHINERY COMPANY
1002 Tennessee Avenue, Cincinnati 29, Ohio
MEIrose 1241

March 25, 1954

THE CLEARING HOUSE

REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

DIRECT CURRENT MOTORS 230-V.D.C.

Qu.	HP	Make	Type	RPM
1	6"	Whae.	MLH	600
14*	1500	Whae.	MLH	600
10*	800	Whae.	MLH	600
8	700	Whae.	MLH	385/700
1	350	G.E.	CD-169	1150
1	350	G.E.	MPC	325/975
1	500/250	G.E.	MPC	300/900
1	300/250	EL Dy.	Slze 32	400/1200
1	300	Whae.	MLH	300/1200
1	180	G.E.	MPC	400
1	140/90	G.E.	MPC	625/1125
1	135	Whae.	SE-190	600
1	135	Whae.	SE-184	575/850
8	100	EL Dy.	SO-S	450/1100
8	T.E.F.C 75	C.W. 534		860
1	80	Whae.	SK	250/1000
1	40	Whae.	SK-140	500/1700
1	35	G.E.	CD-125	400/1200
1	35	G.E.	CD-147	300/1200

*625 and 600 V. D.C.

MOTOR GENERATOR SETS

Qu.	KW	Make	Volts HPM DC	Volts AC
1 (5U)	2400	Whae.	720 800	4800/2400
2	1750	G.E.	450 250	4800/2300
2	1300	Whae.	720 600	2300
2	500	C.W.	720 575	2300/440
1	400	C.W.	1200 125/250	2300/440
1	400	C.W.	720 250	2300/440
1	800	Whae.	900 250	2300
1	150	G.E.	720 250	2300/440
1	160	Ridgway	1200 275	4000/2500
1	100	C.W.	1200 125	440/230
1	100	Whae.	900 250	2300

CRANE & MILL MOTORS 230-V.D.C.

Qu.	HP	Make	Type	RPM
1	905/300	G.E.	MDP-420	350/410
3*	187	G.E.	MDS-418	435
1	150/300	Whae.	MCA-100	370/300
4*	140/100	G.E.	MDA-108	430/500
1	140/100	Whae.	MCA-90	500/415
1	110/85	Whae.	MCA-80	520/450
1	90/70	Whae.	MCB-70	440/400
1	85/65	G.E.	CO-1811	860/500
1	80/54	C.W.	F.W.	575/480
1	65/50	Whae.	MCA-60	475/455
3	60	G.E.	CO-1830	535
1	50	G.E.	CO-1829	750
1	50	G.E.	CO-1810	755
1	45/37	Whae.	K-9	515/470
2	45/45	G.E.	CO-1810	500/450
1	35	G.E.	MDA-104 1/2	830
1	35/50	G.E.	CO-1828	750/650
1	35	G.E.	MDS-410	525
1	40/30	Whae.	MCA-50	525/440
1	30/40	Whae.	MCB-50	525/440
8	35/25	G.E.	MDS-408	575/500
8	30/23	Whae.	MCA-40	450/550

*Compound wound, all other series

SLIP RING MOTORS Constant Duty 3 phase 60 cycle

Qu.	HP	Make	Type	Volts	RPM
1**	1300	G.E.	MT-26	2300	857
1**	1300	G.E.	MT-26	277	277
1	700	G.E.	I-M	2300	400
1**	600	G.E.	MT-20	2300	360
1	500	Al. Ch.	ANY	2200	514
2	500	G.E.	I-16-M	2300	450
2	400	G.E.	MT-412	2200	450
1	300	G.E.	I-3-M	2200	600
1	250	Whae.	CW 937	440	1200
1	250	G.E.	MT 414	2200	300
1	250	Al. Ch.	ARY	440	720
2	100	G.R.	I-15-M	2300	514

SQUIRREL CAGE MOTORS 3 phase 60 cycle

Qu.	HP	Make	Type	Volts	RPM
1	400	G.E.	IK	2300	514
1	300	Whae.	CH 990	2300	1750
1	300	Al. Ch.	A.R.	440/220	580
1	200	Whae.	CH 875 C	2200	1160
1	150	Al. Ch.	A.R.	2300	1750
1	125	Al. Ch.	A.R.	2300	490
1	100	G.E.	KT 562	440/220	570
1	100	Whae.	CH 938	2200	495

SYNCHRONOUS MOTORS 3 phase 60 cycle

Qu.	HP	Make	FF	Volts	RPM
1	3000	Whae.	80	4800/2400	720
1	2100	G.E.	100	2300	360
2	2000	G.E.	80	2300	720
2	1750	G.E.	100	2200	3600
1	150	G.E.	80	2300	450
1	110	G.E.	80	2300/440	720
1	854	G.E.	100	2300	514
1	550	G.E.	80	2300	600
2	500	Whae.	80	440/220	1200
1	187	G.E.	80	440/220	720
1	150	G.E.	100	2200	900
1	150	G.E.	80	440/220	450
1	130	G.E.	80	4000/2200	1200
1	125	G.E.	80	2200	900
2	100	Whae.	80	440	1800
2	100	G.E.	80	440/220	600

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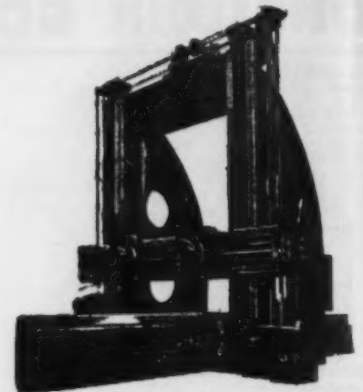
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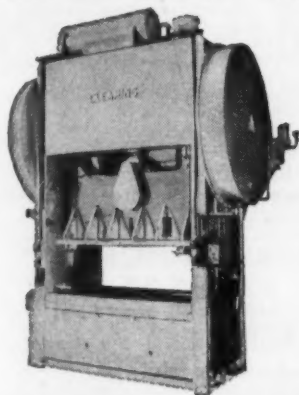
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150	Westg.	SK-173	550
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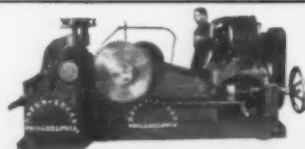
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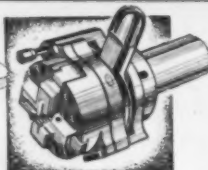
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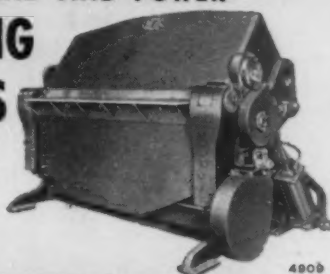
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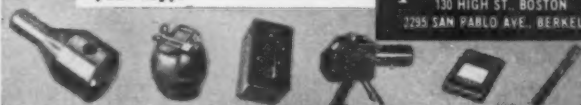
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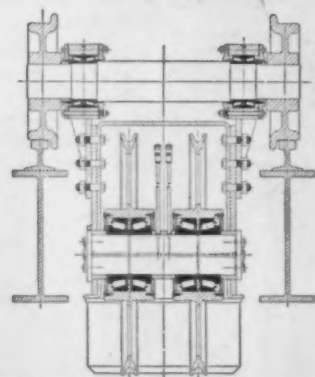
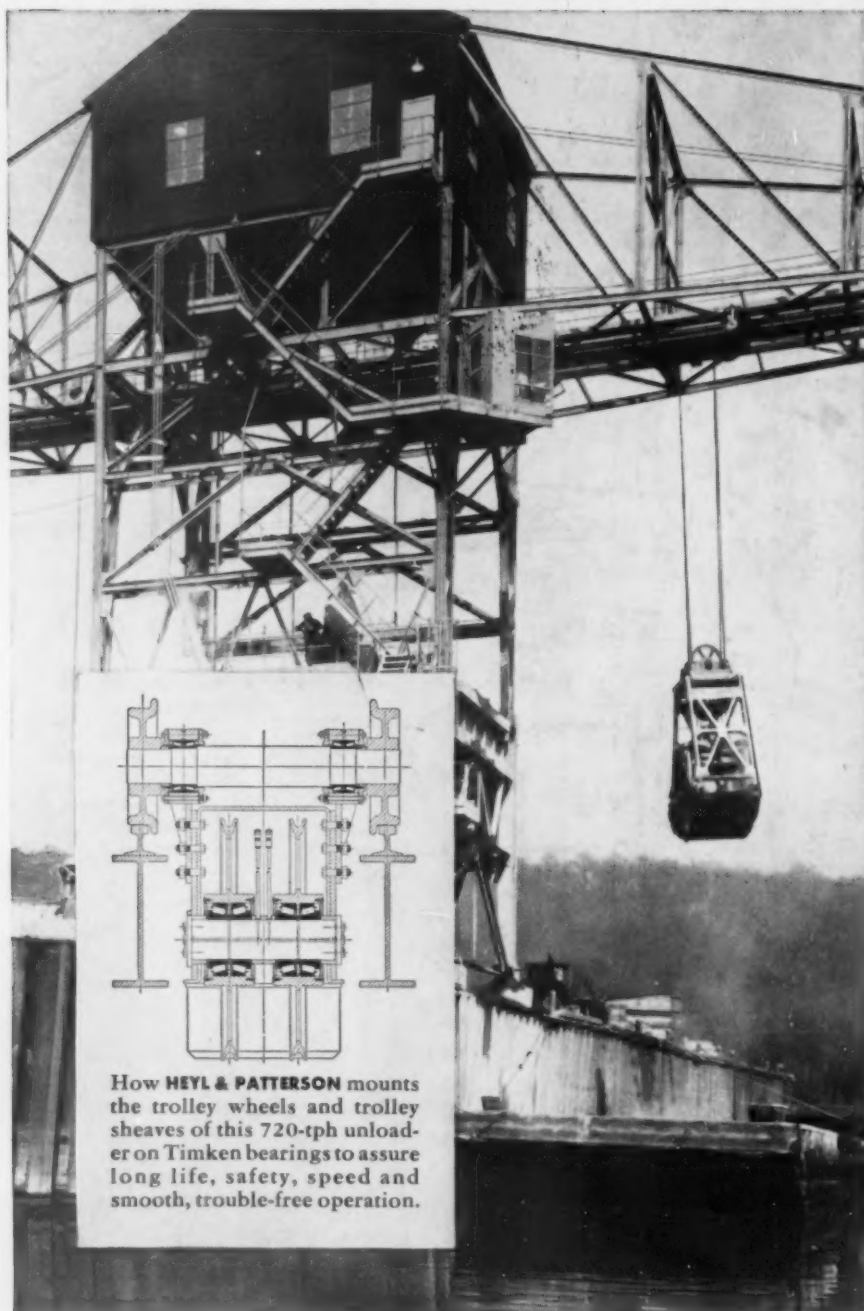
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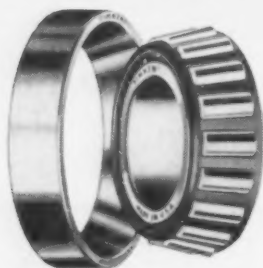
In addition, Timken bearings help make a 30-second unloading cycle possible because their true rolling motion and incredibly smooth surface finish practically eliminate friction. Sheaves and wheels turn easily, smoothly.

Another benefit: Timken bearings absorb the punishing jolts delivered to the sheaves and trolley wheels because their rollers and races have tough, shock-resistant cores under hard, wear-resistant surfaces.

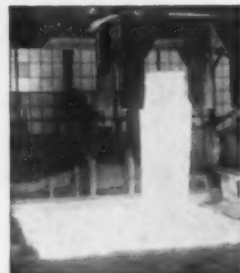
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